CATALOG 1983-84

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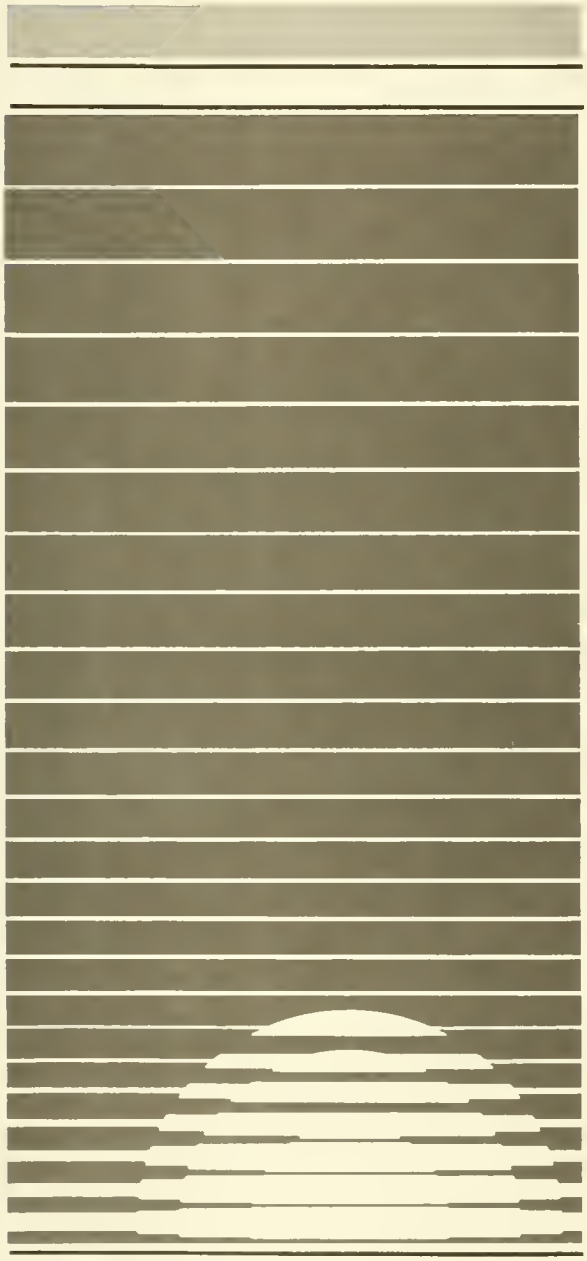
# THE WILLIAMSPORT AREA COMMUNITY COLLEGE

*The Williamsport Area Community College, A Two-Year, Co-Educational, Publicly-Supported Institution Serving Northcentral Pennsylvania, Fully-Accredited Member of Middle States Association of Colleges and Secondary Schools*



The Williamsport Area Community College
1005 West Third Street
Williamsport, Pennsylvania 17701-5799
(717) 326-3761

## SPONSOR SCHOOL DISTRICTS

**Bradford County**
- Canton Area
- Troy Area

**Clinton County**
- Keystone Central

**Columbia County**
- Millville

**Lycoming County**
- East Lycoming
- Jersey Shore Area
- Montgomery Area
- Montoursville Area
- South Williamsport Area
- Williamsport Area

**Northumberland County**
- Line Mountain
- Warrior Run

**Potter County**
- Northern Potter

**Snydar County**
- Selinsgrove
- Midd-West

**Sulliven County**
- Sullivan County District

**Tioga County**
- Northern Tioga Area
- Southern Tioga Area
- Wellsboro Area

**Union County**
- Mifflinburg Area

# CATALOG 1983-84

Catalog Issue, Vol. 15 Fall 1983, No. 1

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# ABOUT THE COLLEGE

## History

1914 – A small industrial arts shop opened at the Williamsport High School.
1920 – A full-time adult day school and an evening school were established.
1941 – The Williamsport Technical Institute was formed, encompassing both the adult and high school programs.
1965 – The Williamsport Area Community College was established by expanding the programming of the Williamsport Technical Institute to include a larger range of community needs.
1981 – The College dedicated three new buildings constructed under Stage I of the building improvement program.
1982 – The College broke ground for a new Lifelong Education Center - part of an on-going facilities improvement program.

## Today

The Williamsport Area Community College serves over 16,000 people a year through a diverse range of programs and courses. The College offers:

*Fifty-five programs leading to associate degrees or certificates in vocational and technical fields and in the liberal arts and sciences.

*Vocational training for secondary students.

*Courses tailored to meet the needs of business and industry for employee training.

*A broad range of avocational courses offered both on-campus and at 10 off-campus locations.

Backed by a tradition of excellence in technical education, the College has gained a national reputation for the diversity and quality of its occupational programs. Of the more than 3000 students a year enrolled in associate degree and certificate programs, about 2800, or 92 percent, are in a technical or occupational area.

The College's programs are housed on five campuses: the central campus in Williamsport, the Earth Science Center in Allenwood/Montgomery, the Aviation Center, adjacent to the Lycoming County Airport in Montoursville, the Danville State Farm Laboratory, and the North Campus, located near Wellsboro. Courses are also offered at locations throughout the College's 20 sponsoring school districts.

In 1983, the College acquired two new facilities, the Danville State Farm Laboratory and the North Campus. We also developed two new programs, Dairy Herd Management and Word Processing. And in 1984, the new Lifelong Education Center will open on our central campus in Williamsport. Our on-going progress — in facility and program development — improves our ability to meet the educational needs of our students.

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The provisions of this catalog are not to be considered an irrevocable contract between the student and the College. The Williamsport Area Community College reserves the right to change any fees, requirements and regulations at any time within the student's term of enrollment at the College.

Students are responsible for meeting in full the requirements for graduation set forth by the College. The student's advisor assists in the planning of a program, but the final responsibility for meeting the requirements for graduation rests with the student.

The Williamsport Area Community College does not discriminate on the basis of age, sex, handicap, race, religion, creed, or national origin. Student inquiries concerning Title IX compliance should be directed to the Associate Dean of Educational Services, Learning Resources Center, The Williamsport Area Community College, 1005 West Third Street, Williamsport, PA 17701-5799/(717) 326-3761, ext. 211, or to the Director of the Office of Civil Rights, Department of Education, Office of Civil Rights, Washington, D.C., 20201.

## PRESIDENT'S MESSAGE

The challenges of the future invite each of us to develop our abilities and our minds to the fullest. At The Williamsport Area Community College we offer you the opportunity to prepare to meet these challenges.

Our 1983-84 catalog describes many of the College's resources - programs and services designed to help you develop your potential. You'll find opportunities to acquire the skills needed for a wide variety of careers. You will also find programs designed to transfer to four-year colleges.

Whatever your goal, I invite you to explore our resources and make full use of the opportunities we offer. And, as you prepare for your future, I encourage you to strive to extend your limits and reach your potential — both as a student and later as a graduate of The Williamsport Area Community College.

*Robert L. Breuder*
*President*

Penn College
W.T.I. W.A.C.C.
1941 - 1965 - 1[illegible]

# BOARD OF TRUSTEES

On behalf of the Board of Trustees, I welcome you to The Williamsport Area Community College. All of us are proud to be a part of the College and to participate in its development. Our goal is to offer to each of you the opportunity to prepare for a satisfying and rewarding future.

*Gay Campbell*
*Chairman, Board of Trustees*

GAY CAMPBELL/CHAIRMAN,
BOARD OF TRUSTEES; Morris

MARIO CALDERA/VICE CHAIRMAN,
BOARD OF TRUSTEES; South Williamsport

EDWARD J. DURRWACHTER/SECRETARY,
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Mill Hall

LESTER L. LESSIG
Williamsport

W. JACK LEWIS
Millville

KATHRYN LUMLEY
Jersey Shore

PAUL A. PAULHAMUS
Cogan Station

C. WILLIAM SICK
Dushore

QUENTIN S. SNOOK
Mifflinburg

ROBERT E. SWARTZLANDER
Dalmatia

# ADMISSION

# ADMISSION

## Admission Policy

At The Williamsport Area Community College we are committed to serving the educational needs of students from all walks of life. The College operates under an "open-door" admissions policy and is open to anyone with a high school diploma or its equivalent. Anyone age 18 or older who does not have a high school diploma or the equivalent may be admitted as a "special student."

Acceptance to several programs of study is based upon the applicant's meeting the requirements (including necessary academic skills and prerequisites) of the specific program of study. The College reserves the right to deny admission or readmission to any student if, in the opinion of College authorities, his/her admission is not in the best interest of the student or the College.

The Williamsport Area Community College offers equal opportunity for admission without regard to age, race, color, creed, sex, national origin, handicap, or veteran status.

The College will provide opportunities to develop the basic skills necessary to enroll in associate degree and certificate courses to those who demonstrate such needs on the College's placement tests.

## Acceptance and Admission Preference

The Williamsport Area Community College will accept students based on the date the applicant's file (i.e., application for admission, application fee, transcripts/GED, and, when appropriate, testing material) is completed in the Admissions Office, with the exception that sponsor district applicants whose files are complete by the dates below will have preference for admission.

The College will grant preference for admission to residents of sponsor districts until February 1 for the fall semester and until October 1 for the spring semester.

## Admission Procedure

All graduates of accredited secondary schools in the Commonwealth of Pennsylvania are eligible for admission to the College as regular students. Admission into a specific program is based upon evidence of scholastic readiness for the program.

1. Application and Application Fee

   All applicants to degree and certificate programs must submit an "Application for Admission" form together with a non-refundable application fee. This fee is charged only once. The Director of Admissions, upon written request from a high school counselor or state agency, has the authority to waive the fee when it can be determined that the fee causes financial hardship to an individual.

2. High School Graduation

   a. *High school students* must submit a partial transcript during their senior year. However, a final transcript of high school credits or proof of graduation from an approved or accredited high school with a four-year course of study must be on file before a student can attend classes.

   b. *High school graduates* must submit a final transcript of high school credits or proof of graduation from an approved or accredited high school with a four-year course of study.

   c. *Applicants age 18 or older* may be admitted to the College on the basis of an equivalency diploma, provided that the applicant has earned a minimum General Equivalency Diploma (GED) test score average of 45. Under special circumstances, applicants *17 years of age* may be considered for admission with a minimum GED test score average of 45.

   d. *Anyone age 18 or older* who has not met the requirements of sections a., b., or c. above may be considered for admission into a program as a "special student" provided he/she has the appropriate aptitudes and abilities to enter the College.

   e. *Early Admission:* a student of exceptional ability who has completed the eleventh grade in an accredited high school may enroll at the College as a full-time or part-time student in either a degree or certificate program during what would normally be the senior year of high school. For a student to qualify for early admission, the chief administrative officer of the student's high school must approve and submit the "Admissions Application" together with an official high school transcript, to the College Admissions Office. The Admissions Office will determine whether the student is eligible for the specific degree or certificate program desired. Upon satisfactory completion of the first year in a full-time college program, an early admission student can qualify for a regular high school diploma.

3. Placement Examinations

To insure that applicants have the entry-level skills needed for their programs, all full-time accepted students are required to take the College's placement examinations. The College uses these examinations to assess applicants' skills in math, English and reading. Based on the results of their tests, students will be placed in the appropriate math, English, and reading courses. The College reserves the right to recommend another program or require developmental courses if the test results indicate that an applicant does not have the required academic entry skills.

4. Health Records Requirement

A student who may need special accommodations due to a physical or mental disability/handicap must submit his/her medical history on a health record card. (Health record cards are available from the College's Admissions Office.) The health card should be submitted well in advance of the term in which the student plans to enroll to allow the College to prepare for any special needs. The card must be received before the student can begin classes. A disability or handicap will not be used to deny a person admission to the College.

5. Tuition Deposit and Tuition Payment

All full-time applicants who have been accepted as degree-seeking or certificate-seeking students must submit a $100 tuition deposit. The tuition deposit will be credited to the student's tuition for the first semester. If the student does not enroll and notifies the College by the pre-determined deadline, the College will refund 80 percent of the tuition deposit.

The tuition deposit will hold a space in class until the announced deadline. Students who have not met their total financial obligations for the semester by the deadline will forfeit their class space. As a result someone from the College's waiting list may take their space in the program.

6. Additional Requirements

In addition to the College's general admission policies and requirements, applicants to the Aviation Maintenance Technician, Aviation Technology, Dental Hygiene, Surgical Technology, Practical Nursing, Radiologic Technology and Respiratory Therapy programs must also meet the following requirements:

a. All applicants must have graduated from an accredited secondary school or have successfully completed the General Equivalency Diploma Examination (GED).

b. All applicants must successfully complete the College's placement tests. All deficiencies, when identified through testing, must be made up before the applicant will be accepted into the program.

c. All qualified applicants (except for applicants to the aviation programs) must discuss their career choice and their expectations of the program during an interview. A hospital observation is required for applicants to Radiologic Technology and Respiratory Therapy.

d. Practical Nursing and Respiratory Therapy applicants must take additional standardized tests. Dental Hygiene applicants are required to take the S.A.T. tests. Test results will be used by the College in determining final acceptance to these programs.

e. Application, testing, and interviews for the Respiratory Therapy program must be completed by March 1.

## Admission of International Students

The Williamsport Area Community College believes that the presence of international students on campus will enrich the educational environment for all students. The College is authorized under Federal law to enroll non-immigrant alien students on "F-I" student visas. An "Application for Admission" and all supporting documents must be received in the Admissions Office at least two weeks prior to the day of late registration for the term in which the student plans to enroll.

All transcripts, test scores, and other credentials become the property of the College and will not be returned or transferred to another institution.

In addition to the College's general admission requirements, international students must fulfill the following requirements:

1. All international students whose native language is not English are required to take the Test of English as a Foreign Language (TOEFL).

2. Applicants must submit an affidavit of support for themselves and for all members of their family who will accompany them to Williamsport. The affidavit certifies that the applicant has adequate funds to attend college and will not become a public charge. Failure to provide this information may result in the denial of the applicant's application for an "F-I" student visa.

3. All international students who are accepted must take the College's placement tests. Placement into the appropriate level of courses will be determined by the tests. International students must arrange to be on campus approximately one week prior to registration for the term in which they are enrolling. Failure to complete placement tests may result in denial of acceptance into programs.

4. International students must become familiar with the regulations of the Immigration and Naturalization Service and assume responsibility for complying with test regulations.

## Reenrollment

Former students who wish to reenroll must apply for readmission through the Admissions Office. They do not have to submit an application fee. They may be required to submit a health records card. (See Health Records Requirement on page 5.)

1. A student who:

   a. reenrolls in the same program in which he/she was last enrolled, and
   b. reenrolls less than two years after he/she last attended the College,

   is required to meet graduation requirements in effect at the time the student was originally enrolled.

2. A student who:

   a. reenrolls in the same program in which he/she was last enrolled, and
   b. reenrolls two or more years after he/she last attended the College,

   must meet current graduation requirements. All course work previously completed will be reviewed on a course by course basis to determine whether it meets current graduation requirements. All courses completed will remain on the student's transcript. Only credits for courses which meet the current program requirements will be used in calculating the student's cumulative grade point average.

3. If a student reenrolls in a program different from the one in which he/she was last enrolled, each course previously taken will be evaluated to determine whether it meets the requirements of the new program. Only credits for courses which meet the requirements of the current program will be used in calculating the student's cumulative grade point average. However, all courses completed will remain on the student's transcript. Students reenrolling in a new program are required to meet the graduation requirements for the new program in effect at the time they reenroll.

   Special circumstances may be appealed to the Dean of Academic Affairs or his/her designee, who may waive the conditions given above.

## Change of Program

A change of program may be made at the beginning of any semester. Currently enrolled students who wish to change from one program of study to another must follow the steps below:

1. Complete an "Admissions Application" and submit it to the Admissions Office. Acceptance into the new program will be based on sponsorship status and on the date the applicant's file is complete in the Admissions Office.

2. Complete a "Student Status Change" form; obtain all required signatures (advisor, counseling, division director, admissions). Submit the form to the Student Records Office.

When a student changes his/her program, all credits earned in the prior program will be evaluated for transfer to the new program. All prior course work will appear on the student's transcript. Only courses applicable to the new program will be used to calculate the student's new cumulative grade point average.

## Transfer Students

Students from other colleges who wish to transfer to The Williamsport Area Community College must follow the procedure below:

1. Complete steps listed under Admission Procedure, (see page 4) with the exception of "High School Graduation."

2. Ask all college(s) previously attended to send an official transcript to The Williamsport Area Community College Admissions Office. The College may also request a high school transcript.

3. Provide course descriptions or a college catalog to the Admissions Office for use in evaluating courses completed at another institution.

## Transfer Credit

Transfer credit includes: credit for courses earned at another institution, college credit earned before high school graduation, service credit, United States Armed Forces Institute (USAFI) credit, and credit earned through the College Level Examination Program (CLEP).

A maximum of 30 transfer credits may be applied toward a degree or certificate. Courses to be considered for transfer must have been completed with a grade of "C" or better. However, if a student earns a cumulative "C" average or better in sequential courses (for example, English 1 and English 2) an exception may be made based on the evaluation of the courses. Courses taken more than two years before the student enrolls at The Williamsport Area Community College may be evaluated (on a course-by-course basis) to determine if they are equivalent to courses currently required in the student's program. A copy of the evaluation of transfer credit will be sent to the student.

All transfer credit will appear on the student's transcript after the student successfully completes one semester of academic work at The Williamsport Area Community College. Transfer credit will appear on the transcript with credit value only. Transfer students will enroll without any cumulative grade point average. A student must be enrolled in courses at The Williamsport Area Community College for at least the last 12 credit hours of his/her program. Requirements for the evaluation of different forms of transfer credit are listed below.

1. Transfer from Another Institution

   All credits earned at a previously attended institution(s) will be evaluated for transfer credit. The student must send The Williamsport Area Community College Admissions Office an official catalog description of each course to be evaluated and a description of the grading codes (if the grade codes are not defined on the transcript) from each institution from which courses are to be evaluated. These materials must consist of either of the following: the institution's catalog or a photocopy of the course descriptions and the grade codes description taken from the institution's catalog.

2. College Credit Earned Before High School Graduation

   College credit earned before high school graduation will be evaluated only if the college where the work was taken issues an official college transcript. Students who have earned college credit before graduation from high school must follow the procedure defined under "Transfer from Another Institution."

3. Service Credit

   Veterans who have served 12 consecutive months of active military duty will be granted credit for health and/or physical education (if required in their program). The student must submit a copy of his/her report of separation (DD-214) and complete a waiver for physical education with the Math, Science, Allied Health Office.

4. United States Armed Forces Institute Credit (USAFI)

   The College may grant credit for USAFI credit. An official transcript must be mailed directly from USAFI in Madison, Wisconsin to the College's Admissions Office. Credit will be granted for those courses which are substantially comparable to courses offered at The Williamsport Area Community College. If the student's program includes electives, elective credit will be granted for those courses which are not comparable.

5. College Level Examination Program (CLEP)

   The College will examine CLEP results and may grant college credit to individuals who score at least in the fiftieth percentile rank on the CLEP exam. The student must provide an official copy of his/her CLEP scores to the College's Admissions Office. The College will determine whether credit earned through CLEP will be issued for required credit courses or as elective credit.

## Non-Degree Students

A student who does not wish to pursue a degree or certificate program is a non-degree student. Such students are permitted to select courses without regard to degree or certificate requirements. If at a later date, a non-degree student desires to enroll in a specific degree or certificate program, an application for admission to the program, together with any other required credentials, must be submitted to the Admissions Office.

Non-degree students are not eligible for financial aid. They are permitted to schedule classes on a first-come/first-served basis (after currently enrolled students have been given the opportunity to schedule classes). Non-degree students must complete an "Admissions Application" form the first time they schedule credit classes, but are not required to pay the application fee.

## Housing

Students are responsible for making their own housing arrangements. The Housing Coordinator, located in the Admissions Office, Academic Center, Room 104, maintains a list of area housing facilities for men and women. Prospective students are urged to make arrangements for housing as soon as possible after being admitted. A booklet containing guidelines on obtaining housing is available from the Housing Coordinator. The College does not sponsor, approve, disapprove, evaluate or supervise the listed facilities. Any agreement for renting is solely between the landlord and student.

## Health Services

A dispensary, staffed by a registered nurse, is open Monday through Friday from 8 a.m. to 3:30 p.m. during the fall and spring semesters. First aid, health counseling, and assistance in obtaining private health care is available. Costs for private health care are the student's responsibility. The dispensary is located on the second floor of the Academic Center, Room 203.

## Student Retention Data

Persons interested in obtaining data on student retention (number of students who enroll at the College and number who actually complete their program) should contact the Registrar/Director of Institutional Research, Academic Center, Room 110.

# ADMISSION

## Campus And Facilities

In addition to its Central Campus in Williamsport, the College offers credit programs at the following locations:

*Aviation Center* - Adjacent to Williamsport/Lycoming County Airport in Montoursville

Aviation Maintenance Technician
Aviation Technology

*Danville State Farm Laboratory* - South of Danville on Route 11, North

Agribusiness
Dairy Herd Management

*Earth Science Center* - South of Williamsport on Route 15.

Agribusiness
Dairy Herd Management
Floriculture
Forest Technology
Nursery Management
Service and Operation of Heavy Construction Equipment
Wood Products Technology

*North Campus*

The North Campus of The Williamsport Area Community College opened January, 1983, with its first class of Practical Nursing students.

The North Campus is located on Route 6, just south of Wellsboro. The campus was extensively renovated in summer 1983 to provide facilities for two additional programs: Computer Science Technology and Secretarial Science.

Students applying for admission to programs offered at the North Campus must follow the College's Admission Procedures (see page 4). The policies, procedures, tuition and programs for students enrolled at the North Campus are the same as those for students at the central campus in Williamsport.

Anyone interested in more information on the North Campus should contact the North Campus/ Route 6, Box 346/ Wellsboro, PA 16901/ (717) 724-7703.

For additional information on the College's facilities, including access for the handicapped, contact the Office of Admissions, Academic Center, Room 104.

# TUITION AND FEES

## Full-Time Students

A full-time student is defined as anyone enrolled for 12 or more credit-hours per semester.

## Application Fee

Applicants for status as full-time students in degree or certificate programs must include a non-refundable $15 application fee with their "Admission Application." You are required to pay this non-refundable fee only once.

## Tuition Deposit

All applicants who have been accepted as full-time degree or certificate students must pay a $100 tuition deposit to hold a class reservation in the first semester for which they have applied.

If you enroll at the designated time, the deposit will be credited to your tuition for the first semester. If you do not enroll and notify the College by the pre-determined deadline, the College will refund 80 percent of the tuition deposit.

## Tuition and Related Fees—1983-84**—Per Semester

Tuition and related fees are governed by your area of residence. The four categories of residence and the tuition and fees for each are:

1. **School District Sponsoring The Williamsport Area Community College**

   A sponsor school district is one which contributes to the financial support of the College. At present, 20 school districts sponsor the College. If you reside in a school district which sponsors The Williamsport Area Community College, you must have the secretary of your local school board complete a Certificate of Sponsorship in order to be eligible for sponsoring school district tuition rates. The form should be mailed to the Bursar's Office after you have been accepted and as soon as possible prior to registration. (Sponsor school districts are listed in the front of this catalog).

| | FULL-TIME | PART-TIME* |
|---|---|---|
| Tuition | $541.00 | $45.10 |
| Service Fee | none | none |
| Activity Fee | $ 20.00 | none |
| TOTAL | $561.00 | $45.10* |
| (For one semester) | | |

**Tuition and Fees are subject to change without notice.

2. **Pennsylvania School District Sponsoring Another Community College**

If you reside in a school district which sponsors another Pennsylvania community college, you must obtain permission, IN WRITING, from the Board of Trustees of the other community college in order to qualify for sponsoring school district tuition and fees. If you do not obtain permission, you will be charged the same tuition and fees as non-sponsor students.

| | FULL-TIME | PART-TIME* |
|---|---|---|
| Tuition | $541.00 | $45.10 |
| Service Fee | $138.00 | $11.50 |
| Activity Fee | $ 20.00 | none |
| TOTAL | $699.00 | $56.60* |
| (For one semester) | | |

3. **Non-Sponsoring Pennsylvania School District**

If you reside in a Pennsylvania school district which does not sponsor a Pennsylvania community college, you will pay the following tuition and fees:

| | FULL-TIME | PART-TIME* |
|---|---|---|
| Tuition | $1226.00 | $102.15 |
| Service Fee | $ 138.00 | $ 11.50 |
| Activity Fee | $ 20.00 | none |
| TOTAL | $1384.00 | $113.65* |
| (For one semester) | | |

4. **Out-of-State Resident**

Out-of-state students will pay the following tuition and fees:

| | FULL-TIME | PART-TIME* |
|---|---|---|
| Tuition | $1623.00 | $135.25 |
| Service Fee | $ 276.00 | $ 23.00 |
| Activity Fee | $ 20.00 | none |
| TOTAL | $1919.00 | $158.25* |
| (For one semester) | | |

*Per semester hour of credit or equivalent.

## Fees for Students Enrolling for Overload Credits

With the exception of students in programs which require more than 18 credits a semester (as described in the College catalog), a degree or certificate student enrolled for more than 18 credits (during the fall and spring semesters) will be charged the current student tuition rate per credit for each credit over 18. (For example, if the student schedules 19 credits, he/she will be billed for the current full-time tuition plus the tuition for one credit.)

See page 120 for additional information on overload credits.

## Deferred Payment

The College shall not knowingly accept a partial payment from any student except as required for tuition deposits, financial aid plans, or within the guidelines established by the Board of Trustees' policy for deferred fee status (given below).

Any student whose fee is in arrears after the first day of classes shall be subject to a $20 deferred processing fee.

Students who are unable to pay tuition and fees in full by the due date, may make a partial payment as determined by the College and pay the remaining portion in two equal installments at 30-day intervals following the beginning of the semester. A $20 processing fee will be charged for this installment plan. Nullification or adjustment of financial aid awards shall not alter the student's obligation to complete installment payments to the College.

Students who fail to meet their financial obligations under this plan shall be administratively withdrawn. Such termination will not cancel the student's financial obligation to the College. Students participating in an installment plan will have their grades and transcripts held until their accounts are settled.

## Books and Supplies

Expenses for books and supplies will vary considerably from program to program. The College tries to keep expenses as low as possible by operating the College Bookstore on a low-cost basis. For full-time students the cost for books and supplies can be as high as $150 per semester.

## Tools

When you have been accepted in a particular program, the Admissions Office will provide you with a list of required tools. We recommend that you do not buy any tools or protective clothing for any course before attending the first class. Tool costs vary greatly, depending on your program. Prospective students should contact the Admissions Office for a list of estimated tool costs for each program. The tools will be your personal property. In many cases, students will use these tools throughout their careers.

## Transcripts

The student's grade report is an unofficial transcript which shows all course work completed by the student. Students may use their grade report when an unofficial transcript is needed.

Students will be charged $1.00 for each additional transcript. All requests for additional transcripts must be submitted in writing to the Student Records Office. The request must contain the following information: the student's name while attending The Williamsport Area Community College, the student's address and social security number, the dates of enrollment, the name of the program(s) in which the student was enrolled, and a complete address to which the transcript is to be sent. If the transcript is sent to the student or to his/her address, it is considered an unofficial copy. Official transcripts are only those transcripts sent to another institution, agency, or employer.

## Graduation Fees

Any students who wish to receive an engraved diploma or certificate when they graduate must pay a $5.00 fee when they petition to graduate. If a student orders a diploma or certificate after the advertised date for ordering a diploma (i.e., two months prior to the date of graduation), the student must pay a special processing fee of $10.00.

If a graduating student does not wish to receive an engraved certificate or diploma, he/she will not be charged the graduation fee but must still file a petition. (See Petition to Graduate on page 126.)

## Withdrawals and Refunds

Charges for tuition are refundable upon official withdrawal from the College as explained in the Academic Information section. Application fees, service fees, activity fees, and tuition deposits (except as described under Tuition Deposit) are not refundable. A "Request for Refund" form can be obtained from the Student Records Office. In order to obtain a refund the "Request for Refund" form and the necessary withdrawal forms (i.e., "Student Status Change Form") must be submitted at the same time. (See page 127 for withdrawal procedures.)

Refunds of tuition will be made according to the following schedule for fall and spring semesters:

| | |
|---|---|
| Prior to the first day of classes | 100% Refund |
| First week of classes | 80% Refund |
| Second week of classes | 70% Refund |
| Third week of classes | 60% Refund |
| After third week of classes | No Refund |

Refunds will be made according to the following schedule for the summer semesters:

| | |
|---|---|
| Prior to the first day of classes | 100% Refund |
| 7% of total instructional hours | 80% Refund |
| 13% of total instructional hours | 70% Refund |
| 20% of total instructional hours | 60% Refund |
| After 20% of total instructional hours | No Refund |

# FINANCIAL AID

Recognizing that the cost of education is often greater than the student and his/her family can afford without help, the Financial Aid Office helps students obtain financial assistance through a variety of aid programs:

Grants
Scholarships
Loans
College Work-Study Program
Veteran's Benefits
Vocational Rehabilitation Sponsorship
Part-Time Employment

Every student is encouraged to thoroughly explore each of the above programs, and to contact the Financial Aid Office for assistance in obtaining and completing applications for aid.

## Employment

Students interested in part-time employment other than the College Work-Study program should contact Counseling, Career Development and Placement for further information.

## Special Attention

### Deadlines

Students who want the fullest consideration for all awards should have all needed application materials complete and on file in the Financial Aid Office as soon as possible. For the 1984-85 year, for example, completed applications for some forms of aid should be on file by March 1, 1984. Applications received after this date will be processed and students filing late will be considered for aid, but only after other applications received by the deadline have been reviewed and awards made.

An exception to the above deadline is made for the Guaranteed Student Loan Program. Loan applications may be submitted at any time during the year, but should be filed early enough to allow for the six to eight week processing time prior to loan approval and release of funds to the applicant.

### Need Analysis Forms

To determine a student's financial eligibility for awards, especially Supplemental Grants and College Work-Study

awards, a review of the family financial situation must be completed.

The College uses the Pennsylvania Higher Education Assistance Agency system for need analysis purposes. These forms can be obtained from the College's Financial Aid Office, high schools and the state agency.

## Policy on Satisfactory Academic Progress

This policy applies to all students receiving financial aid from federal or state student assistance programs:

Pell/SEOG/College Work Study (Federal Programs):

A full-time student who receives aid from the Pell, SEOG, or College Work Study Programs must make satisfactory academic progress in order to continue to be eligible for aid. Students shall be considered to be making satisfactory progress if, based on their academic achievement, the College permits them to continue their enrollment and provided they successfully complete at least 24 credits by the end of their first academic year. Only those credits earned while the student is receiving aid will be considered in the determination of satisfactory academic progress. While credits earned through advanced placement or life experience and external transfer credits may be used to fulfill graduation requirements, they may not be included in the number needed for satisfactory progress for financial aid purposes.

After receiving aid for the fourth semester of a two-year program or the second semester of a one-year program, the student will not be eligible for additional aid until after graduation from the program. In addition, any student who changes programs two or more times will be determined ineligible pending further review. Any

part-time student who receives aid and who fails, withdraws from, or receives an incomplete in two or more courses in which he/she was enrolled during an academic year (or the equivalent) shall be ineligible for further aid until he/she completes courses equivalent in credits to the number which were not successfully completed.

Students determined to be ineligible for additional aid may appeal this determination by writing to the Director of Financial Aid or his/her designee, stating the basis for appeal. Exceptions may be made based on extenuating circumstances including, but not limited to, documented illness, change of program, or the required completion of Developmental Studies courses. The Director or designee will inform the student in writing of the decision, specifying the duration of time or other conditions under which an exception has been made, or explaining the reason for denying the appeal and detailing the actions necessary for the student to regain eligibility. A student may request a review of the decision in a meeting of the student, Director of Financial Aid and the Associate Dean of Educational Services.

PHEAA:

PHEAA regulations require that for each year of a PHEAA grant, a student must successfully complete 24 credits, otherwise the student will be ineligible to receive additional grants. Appeals must be made directly to PHEAA. This policy is subject to revision by PHEAA.

GUARANTEED STUDENT LOAN AND PLUS LOAN PROGRAMS:

PHEAA and federal regulations require the College to certify the student's academic level in his/her program of study. A student will be considered first level if he/she has not yet completed at least 24 credits toward the degree or certificate. Program regulations currently limit the amount of loan to $2500 per academic level for full-time attendance, and $1250 per academic level for part-time attendance. Exceptions will be made based on extenuating circumstances. Appeals must be made directly to PHEAA.

NOTE:

SEOG = Supplemental Educational Opportunity Grant
CWS = College Work-Study Program
PHEAA = Pennsylvania Higher Education Assistance Agency
GSL = Guaranteed Student Loan
PLUS = Parents Loan for Undergraduate Students

## Veterans Information/Benefits

The College has been approved for the education and training of veterans. The Financial Aid Office provides counseling and assistance to veterans. All veterans must register in the Financial Aid Office in order to collect G.I. benefits or to initiate action concerning the Veterans' Administration. Veterans should bring a copy of their DD 214 and, when applicable, their marriage certificate and children's birth certificates, to the Financial Aid Office for their first interview. The Financial Aid Office maintains a complete supply of forms for such purposes.

The College does not handle advance payment requests.

## Additional Information and Assistance with Applications

Additional information about all of the financial aid programs listed above is available from the Financial Aid Office at the address below. We advise you to request a copy of the College's Financial Aid Brochure, which provides more information about all of these programs. For information and applications, call, write, or visit:

*Financial Aid Office*
*The Williamsport Area Community College*
*1005 West Third Street*
*Williamsport, Pennsylvania 17701*
*(717) 326-3761, Ext. 241*

*The evolution and expansion of The Williamsport Area Community College can be viewed in this aerial photograph of the College's main campus. The 30-acre main campus, located in the City of Williamsport, includes three facilities constructed since 1980.*

# PROGRAMS

## ASSOCIATE DEGREES

The Williamsport Area Community College awards three types of associate degrees. Associate degree programs can help you prepare for employment or serve as the basis for additional education. Associate degree programs require a minimum of 60 credits.

The Associate of Applied Arts (AAA) is offered in Advertising Art, Broadcasting and Journalism. These programs offer students the opportunity to gain the technical and professional skills needed for employment and to prepare for transfer to a four-year college.

The Associate of Applied Science (AAS) degree programs offer students the opportunity to gain the technical and occupational skills needed for employment. These programs also prepare students for transfer to four-year colleges.

The Associate of Arts (AA) degree programs are designed to parallel the first two years of a liberal arts education at a four-year college. Credits earned can usually be transferred toward the first two years of a bachelor's degree.

### Associate of Applied Arts

The Associate of Applied Arts programs offer knowledge and skills in programs emphasizing communications. Each program has prescribed courses that you must complete in order to graduate.

The College offers Associate of Applied Arts (AAA) degrees in the following areas:

**Humanities and Communication Arts**
- Advertising Art
- Broadcasting
- Journalism

### Associate of Applied Science

If you want to gain knowledge and skills in a technical or occupational area, you can earn an Associate of Applied Science degree. Each program has prescribed courses that you must complete in order to graduate.

The College offers Associate of Applied Science (AAS) degrees in the following areas:

**Business and Computer Science**
- Accounting
- Business Management
- Computer Science Technology
- Retail Management
- Secretarial Science
  - Executive
  - Legal
  - Medical
- Word Processing

**Construction Technologies**
- Air Conditioning/Refrigeration
- Architectural Technology
- Carpentry & Building Construction Technology
- Electrical Technology

**Earth Science**
- Agribusiness
- Floriculture
- Forest Technology
- Nursery Management
- Wood Products Technology

**High Technology**
- Civil Engineering Technology
- Electronics Technology
- Engineering Drafting Technology
- Machine Tool Technology
- Technology Studies
- Tool Design Technology

**Humanities and Communication Arts**
- Graphic Arts
- Technical Illustration

**Mathematics, Science, and Allied Health**
- Dental Hygiene
- Dietetic Technician
- Food & Hospitality Management
- Radiologic Technology

**Transportation Technologies**
- Automotive Technology
- Aviation Technology

## Associate of Arts
**(College and University Transfer)**

**The General Studies and Individual Studies Programs**

The Williamsport Area Community College offers an Associate of Arts (AA) degree in both the General Studies Program and the Individual Studies Program. Both programs are designed to provide the student with the opportunity to:

1. Participate in a planned educational program of studies leading to an Associate Degree.

2. Elect, from a broad range of courses, those courses most appropriate to individual academic and career goals.

3. Interact on a regular basis with the College staff and fellow students in the cultural, social, and recreational activities that lead to intellectual growth and emotional maturity.

4. Demonstrate a mastery of basic mathematic concepts and skills.

5. Display in written and verbal presentations the ability to communicate clearly, correctly, and convincingly.

The General Studies Program is designed primarily for transfer to four-year college degree programs. It provides the opportunity to begin academic course work leading to many professional careers. Specific curriculum guides have been developed in the following career areas:

- Business Administration
- Communications Emphasis
- Education Emphasis
- Math-Science Emphasis
- Pre-Law Emphasis
- Pre-Medical Emphasis
- Pre-Theological Emphasis
- Social Work Emphasis

The Individual Studies program offers students the maximum flexibility in designing an associate degree program to meet his or her needs. The Individual Studies program also offers students waiting for an opening in a particular career-oriented program the opportunity to begin work leading to a degree.

# CERTIFICATES

## CERTIFICATE IN SPECIAL FIELD OF STUDY

These programs are occupational in nature and heavily skills oriented. They are not primarily designed for transfer but in certain cases can be transferred to some colleges. Certificate programs vary in length, but do not exceed two years of course work.

A feature of these Certificate in Special Field of Study programs is the optional elective. As the name implies, an optional elective can be chosen to broaden the basic academic work required of all college students. You are urged to make use of the opportunity to enrich your educational experience.

Certificates are offered in the following areas:

**Business and Computer Science**
- Clerical Studies
- Computer Operator

**Construction Technologies**
- Air Conditioning/Refrigeration
- Construction Carpentry
- Electrical Occupations
- Plumbing and Heating

**Earth Science**
- Dairy Herd Management
- Service & Operation of Heavy Construction Equipment

**High Technologies**
- Industrial Drafting
- Machinist General
- Welding

**Humanities and Communication Arts**
- Printing

**Mathematics, Science & Allied Health**
- Practical Nursing
- Respiratory Therapy Technician
- Surgical Technology

**Transportation Technologies**
- Auto Body Repair
- Automotive Mechanics
- Aviation Maintenance Technician
- Diesel Mechanics

## SPECIAL CERTIFICATE OF STUDY

Special Certificates of Study are offered for completion of programs of varying length at the Lewisburg Federal Penitentiary. Special Certificates of Study are offered in the following areas:

- Heating and Air Conditioning (HA)
- Small Engine Repair (SE)

## BUSINESS & COMPUTER SCIENCE
Division Director, Dr. Donald B. Bergerstock

- Accounting (BA)
- Business Management (BM)
- Clerical Studies (BT)
- Computer Operator (CO)
- Computer Science Technology (CS)
- Retail Management (RM)
- Secretarial Science (BS):
  - Executive
  - Legal
  - Medical
- Word Processing (WP)
- **College & University Transfer Program**
  - Business Administration
- **Exam Preparation**
  - Real Estate

## CONSTRUCTION TECHNOLOGIES
Division Director, Dr. Ralph Horne

- Air Conditioning/Refrigeration (RA/RC)
- Architectural Technology (AT)
- Carpentry & Building Construction Technology (CB)
- Construction Carpentry (CC)
- Electrical Occupations (EO)
- Electrical Technology (EL)
- Plumbing and Heating (PL)

## EARTH SCIENCE
Division Director (Acting), Glenn Spoerke

- Agribusiness (AG)
- Dairy Herd Management (DY)
- Floriculture (FL)
- Forest Technology (FR)
- Nursery Management (NM)
- Service & Operation of Heavy Construction Equipment (SO)
- Wood Products Technology (WD)

## HIGH TECHNOLOGY
Division Director, (Appointment Pending)

- Civil Engineering Technology (CT)
- Electronics Technology (ET)
- Engineering Drafting Technology (ED)
- Industrial Drafting (ID)
- Machine Tool Technology (TT)
- Machinist General (MG)
- Sign Painting (SP) - Not offered 1983-84
- Technology Studies (TS)
- Tool Design Technology (TD)
- Welding (WE)

## HUMANITIES AND COMMUNICATION ARTS
Division Director, Dr. James Middleton

- Advertising Art (AR)
- Broadcasting (BR)
- Graphic Arts (GA)
- Journalism (JO)
- Printing (GP)
- Technical Illustration (TI)
- **Service Courses**
  - Advertising
  - Economics
  - Education
  - English
  - German
  - Government
  - History
  - Philosophy
  - Psychology
  - Sociology
  - Spanish

## MATHEMATICS, SCIENCE & ALLIED HEALTH
Division Director, Michael P. Nestarick

- Dental Hygiene (DH)
- Dietetic Technician (DT)
- Food & Hospitality Management (FH)
- Practical Nursing (NU)
- Radiologic Technology (RT)
- Respiratory Therapy Technician (HC)
- Surgical Technology (ST)
- **Service Courses**
  - Biology
  - Chemistry
  - Environmental Science
  - Geography
  - Geology
  - Mathematics
  - Medical Terminology
  - Physical Education & Health
  - Physics

## TRANSPORTATION TECHNOLOGIES
Division Director, William Debolt

- Auto Body Repair (AB)
- Automotive Mechanics (AM)
- Automotive Technology (AU)
- Aviation Maintenance Technician (AC)
- Aviation Technology (AD)
- Diesel Mechanics (DM)

# DIVISIONS AND PROGRAMS

## COLLEGE & UNIVERSITY TRANSFER PROGRAMS

Michael P. Nestarick
Dr. James Middleton

**General Studies**
- Communications Emphasis
- Education Emphasis
- Math-Science Emphasis
- Pre-Law Emphasis
- Pre-Medical Emphasis
- Pre-Theological Emphasis
- Social Work Emphasis

**Individual Studies**

## CENTER FOR LIFELONG EDUCATION

Director, Barbara A. Danko

Non-Credit Courses & Programs
Specialized Business & Industrial Programs

**Exam Preparation**
- Engineer In Training

**Special Programs**
Offered only at the Lewisburg Federal Penitentiary:
- Heating and Air Conditioning (HA)
- Small Engine Repair (SE)

## COOPERATIVE EDUCATION (CED)

Director of Experiential Learning, William C. Bradshaw

Courses in conjunction with Divisions and Programs

## DEVELOPMENTAL STUDIES

Director, R. Dean Foster

COPing Program
Developmental Studies Courses

## SECONDARY VOCATIONAL PROGRAMS

Director, Dr. William J. Martin

Auto Body Repair
Automotive Mechanics
Aviation Maintenance Technician
Carpentry
Cooperative Education (CAPSTONE)
Cosmetology
Drafting - Architectural/Mechanical
Electrical Construction
Electronics
Forestry
Health Assistant
Horticulture
Machine Shop
Masonry
Small Engine Repair
Welding

## ACCOUNTING (BA)

**Associate Degree/2 years**

This program offers a broad business background with a specialization in accounting. It begins on the elementary levels of accounting and business and advances to more complex levels.

**Types of Jobs:** Public, private, government, and corporate accounting, cost accounting, tax consultant, auditor, comptroller.

FIRST SEMESTER

| | | | Credits |
|---|---|---|---|
| ACC | 112 | Accounting I* | 3 |
| MGT | 110 | Principles of Business* | 3 |
| MGT | 111 | Business Mathematics | 3 |
| SEC | 111 | Typewriting I | 3 |
| ENL | 111 | English Composition I | 3 |
| PED | | Physical Education | 1 |
| | | | 16 |

SECOND SEMESTER

| | | | Credits |
|---|---|---|---|
| ACC | 122 | Accounting II | 3 |
| ACC | 125 | Income Tax Accounting | 3 |
| CSC | 118 | Fundamentals of Computer Science* | 3 |
| MGT | 230 | Business Communications | 3 |
| PED | | Physical Education | 1 |
| | | Elective-Social Science/Humanities | 3 |
| | | | 16 |

THIRD SEMESTER

| | | | Credits |
|---|---|---|---|
| ACC | 231 | Cost Accounting | 3 |
| ACC | 232 | Intermediate Accounting I | 3 |
| MGT | 231 | Business Law I* | 3 |
| | | Elective-Computer Science* | 3 |
| | | Elective* | 3 |
| | | | 15 |

FOURTH SEMESTER

| | | | Credits |
|---|---|---|---|
| ACC | 244 | Intermediate Accounting II | 3 |
| MGT | 241 | Business Law II | 3 |
| ECO | 201 | Principles of Economics* | 3 |
| ENL | 202 | Fundamentals of Speech | 3 |
| | | Elective* | 3 |
| | | | 15 |

*Equivalent AIB (American Institute of Banking) courses may be substituted with Division Approval.

Co-op Options:
Parallel
Summer

### EVENING PROGRAM

Courses required for the associate degree in Accounting are also offered in the evenings for the convenience of students who are unable to attend classes during the day. Students may complete all courses required for a degree in Accounting by enrolling in evening courses on a part-time basis. Part-time students may require more than two years to complete the program.

PROGRAM OBJECTIVES

The general objective of the Accounting program is to prepare the student for employment in the accounting field – public, private, and government. As an alternative, graduates may pursue advanced degrees. The program will also upgrade the skills of those now employed in this field.

The graduate should be able to:

1. identify and apply generally accepted accounting principles.
2. organize, prepare, and interpret financial data and statements.
3. demonstrate skill in effective verbal and written communication.
4. use and interpret federal and state income tax laws applicable to the individual and sole proprietor.
5. identify, use and interpret cost accounting information.
6. identify the laws which affect business.
7. apply computer knowledge and techniques in the preparation and analysis of financial statements and data.
8. apply human relations skills in the business environment.
9. apply general knowledge of the social sciences and understand their effect on our society.
10. identify the need for physical fitness and positive leisure activities.

## ADVERTISING ART (AR)

**Associate Degree/2 years**

This program prepares students for employment in advertising art and related fields. Students develop skills in drawing, painting, designing, illustrating, coloring, paste-up, rendering, composing, layout, lettering, sketching, and proper use of tools, equipment, and materials. Related courses in journalism, photography, graphic arts, and courses in English, mathematics, and history increase the student's career opportunities. Some prior training in art is desirable.

**Types of Jobs:** Advertising artist, art director, layout artist, renderer, letterer, illustrator; mechanical work, general board work.
*GENERAL ELECTIVES are courses chosen from outside your program of concentration.

FIRST SEMESTER

| | | | Credits |
|---|---|---|---|
| ART | 111 | Basic Drawing | 3 |
| EDT | 101 | Mechanical Drawing | 2 |
| GCO | 515 | Layout and Design | 3 |
| JOU | 113 | Principles of News Photography | 3 |
| HIS | 111 | Western Civilization I | 3 |
| PED | | Physical Education | 1 |
| | | | 15 |

SECOND SEMESTER

| | | | Credits |
|---|---|---|---|
| ART | 231 | Color and Design | 3 |
| GCO | 525 | Process Camera | 3 |
| ENL | 111 | English Composition I | 3 |
| MTH | 101 | Introduction to Mathematics I | 3 |
| PED | | Physical Education | 1 |
| | | Elective-Humanities/Social Sciences | 3 |
| | | | 16 |

THIRD SEMESTER

| | | | Credits |
|---|---|---|---|
| ART | 121 | Basic Painting | 3 |
| ART | 232 | Lettering and Layout | 3 |
| ART | 233 | Introduction to Art | 3 |
| GCO | 516 | Typographic Composition | 3 |
| ENL | 202 | Fundamentals of Speech | 3 |
| | | | 15 |

FOURTH SEMESTER

| | | | Credits |
|---|---|---|---|
| ART | 241 | Media and Techniques | 3 |
| ART | 242 | Advertising Design | 3 |
| ADV | 101 | Principles of Advertising | 3 |
| GCO | 526 | Film Assembly and Imposition | 3 |
| | | Elective | 3 |
| | | | 15 |

Co-op Options:
Parallel
Summer

PROGRAM OBJECTIVES

The general objective of the program is to prepare students for jobs in the advertising art field or for transfer to a baccalaureate degree program.

A graduate of the Advertising Art program should be able to:

1. demonstrate manipulative skills — including dexterity with pen, brush and ink, litho pencil, carbon pencil, pastel, airbrush, art aids, and water base pigments.
2. create product renderings (drawing or paintings) in the following mediums: watercolor, designers colors, retouch grays, wash, pen and ink, scratchboard, litho pencil, carbon pencil, airbrush, benday screens, and other art techniques used in preparing mechanicals (finished copies used in printing).
3. draw and sketch product and spot illustrations, the figure, and objects from nature.
4. demonstrate skills in color and design as applied to such variables as mass, color elements, shape, space, movement, time, and organization.
5. use lettering and layout skills, such as outline lettering, old style, modern and sans serif, free hand lettering, italic, brush and comp lettering; indicate type styles and sizes for printers.
6. lay out visual material for reproduction or presentation.
7. demonstrate desirable attitudes and work habits — creative thinking, the ability to solve problems, good artistic judgement, industriousness, cooperation, responsibility, self-reliance — and an appreciation for and understanding of past civilizations.
8. demonstrate knowledge of printing and publishing, verbal and written communications, and advertising.
9. understand and respect the employer-employee relationship, and appreciate the need to produce high quality work.
10. demonstrate knowledge of the relationship between various production departments (for example typesetting, the art department, camera, etc.) and the contributions each makes to the total product or service.
11. communicate clearly, both verbally and in writing.
12. demonstrate knowledge of a lifetime sport which will provide recreation and promote physical fitness.
13. demonstrate sufficient understanding of advertising art for entry-level ent and advancement in the field.

## AGRIBUSINESS (AG)

**Associate Degree/2 years**

The Agribusiness program prepares men and women for mid-management positions in an agricultural business and for work in production agriculture as farm owners or supervisors.

**Types of Jobs:** Farm operator or manager; farm supply and garden center; feed, seed, and fertilizer sales; farm credit, financing, and insurance.

*GENERAL ELECTIVES are courses chosen from outside your program of concentration.

FIRST SEMESTER

| | | | Credits |
|---|---|---|---|
| AGB | 111 | Introduction to Agricultural Business | 4 |
| AGB | 112 | Soils, Fertilizer, and Agricultural Chemicals | 4 |
| MGT | 110 | Principles of Business | 3 |
| ENL | 111 | English Composition I | 3 |
| PED | | Physical Education | 1 |
| | | | 15 |

SECOND SEMESTER

| | | | Credits |
|---|---|---|---|
| AGB | 123 | Field & Forage Crop Production | 3 |
| AGB | 124 | Agricultural Financing | 3 |
| AGB | 125 | Dairy Production | 3 |
| MGT | 111 | Business Mathematics | 3 |
| MGT | 230 | Business Communications | 3 |
| PED | | Physical Education | 1 |
| | | | 16 |

THIRD SEMESTER

| | | | Credits |
|---|---|---|---|
| AGB | 236 | Animal Production | 4 |
| AGB | 237 | Special Topics in Agribusiness | 3 |
| ACC | 112 | Accounting I | 3 |
| ENL | 202 | Fundamentals of Speech | 3 |
| | | Elective-General* | 3 |
| | | | 16 |

FOURTH SEMESTER

| | | | Credits |
|---|---|---|---|
| AGB | 240 | Internship/Co-op | 3 |
| AGB | 248 | Farm Management | 3 |
| AGB | 249 | Agricultural Sales and Service | 3 |
| ECO | 201 | Principles of Economics | 3 |
| | | Elective-General* | 3 |
| | | | 15 |

Co-op Options:
Parallel
Summer

PROGRAM OBJECTIVES

The general objective of the program is to prepare students for jobs in agricultural businesses and to improve and add to the skills of students who will return to their home farms.

A graduate of Agribusiness should be able to:

1. write clear, concise, legible, and accurate technical reports.
2. use skills in verbal communication, speak logically, and use various types of communication techniques to promote sales and service and to develop leadership skills.

3. interpret farm records and apply the principles of management and economics as they relate to the farm, including agribusiness financing and interpreting computer print-outs.
4. analyze procedures involved in breeding, feeding, housing, and managing a dairy herd.
5. describe the physical and biological properties of soil, the use and general effects of fertilizer, and the proper use of chemicals in crop and livestock production.
6. identify various types of business organizations and business principles — including planning, organizing, financing and marketing.
7. describe the principles of breeding, feeding, marketing, and management of beef, swine, sheep, and poultry.
8. explain the marketing of agricultural products — including the psychology of selling and pricing and the importance of customer service.
9. demonstrate an attitude of responsibility toward agribusiness and the world of work.
10. use appropriate math skills to solve applied problems in agribusiness.
11. demonstrate an appreciation of physical fitness and lifelong recreational activities.

## AIR CONDITIONING/REFRIGERATION (RA)

**Associate Degree/2 years**

This program provides background knowledge and skills training in air conditioning, temperature and humidity control, air circulation, duct system design, thermostats, ventilating equipment and automatic controls. Students learn to repair equipment in the lab segments of the program. The combination of lab practice and theory prepares students for employment and advancement in today's air conditioning and environmental control industry.

**Types of Jobs:** Refrigeration and air conditioning equipment mechanic, estimator, sales representative, air conditioning lab technician, industrial physical plant maintenance and environmental control.
**Recommended High School Subjects:** Two years of algebra, one year of science.

FIRST SEMESTER

| | | | Credits |
|---|---|---|---|
| ACR | 511 | Introduction to Refrigeration | 5 |
| ELT | 531 | Air Conditioning/Refrigeration Electricity | 6 |
| MTH | 103 | College Algebra & Trigonometry I | 3 |
| ENL | 111 | English Composition I | 3 |
| | | | 17 |

SECOND SEMESTER

| | | | Credits |
|---|---|---|---|
| ACR | 521 | Commercial Refrigeration Systems | 4 |
| ACR | 522 | Installation & Service Problems – Commercial | 4 |
| ELT | 541 | Electric Motors & Refrigeration Controls | 5 |
| PHS | 500 | Physics Survey | 3 |
| PED | | Physical Education | 1 |
| | | | 17 |

SUMMER TERM

| | | | Credits |
|---|---|---|---|
| ACR | 250 | Air Conditioning/Refrigeration Work Experience | 1 |

THIRD SEMESTER

| | | | Credits |
|---|---|---|---|
| ACR | 231 | Theory & Operation of Air Conditioning & Heating Systems | 4 |
| ACR | 232 | Installation & Service Problems – Air Conditioning | 5 |
| PSY | 111 | General Psychology | 3 |
| PED | | Physical Education | 1 |
| | | Elective-Math/Computer Science | 3 |
| | | | 16 |

FOURTH SEMESTER

| | | | Credits |
|---|---|---|---|
| ACR | 241 | Air Movement and Ventilation | 4 |
| | | Elective-Technical/Co-op* | 3 |
| ENL | 201 | Technical Writing | 3 |
| | | Elective-Business | 3 |
| | | Elective-General | 3 |
| | | | 16 |

*One technical elective in Air Conditioning/Refrigeration, for example, ACR 242 Solar Heat/Energy Conservation, will be offered each spring semester. Students may also choose an elective from another technical associate degree program or enroll in Co-op.

PROGRAM OBJECTIVES

The goal of this program is to prepare students for employment in the field of commercial, residential, and industrial air conditioning and refrigeration installation, maintenance, and service.

A graduate of the program should be able to:

1. demonstrate the ability to do technical work in a variety of air conditioning and refrigeration fields; apply safety standards and understand and work with technical developments in the industry.
2. apply concepts of algebra and physics in the design, development, and analysis of refrigeration and air conditioning equipment and systems.
3. identify and demonstrate correct use of tools, materials, and equipment used in the trade.
4. demonstrate the ability to read and interpret blueprints and use blueprints when installing equipment.
5. troubleshoot air conditioning and refrigeration equipment using standard troubleshooting procedures.
6. write clear, concise, legible, and accurate technical reports using standard English and apply verbal communication skills in job-related activities.
7. read and interpret electrical schematics and use schematics when installing equipment.
8. estimate the cost of an installation and design an effective system for a specific location and use.
9. demonstrate a responsible attitude in relationships with employers and co-workers and toward the world of work.
10. demonstrate an awareness of and respect for customer/employer relations.
11. demonstrate knowledge of the operation and use of hermetic, reciprocating, and centrifugal compressors.
12. apply basic knowledge of air flow, ventilation, and energy conservation concepts to the design of systems using modern building design and solar energy technology.

## AIR CONDITIONING/REFRIGERATION (RC)

**Certificate/1 year**

This program provides the training needed to understand and work with modern refrigeration installations. During lab sessions students troubleshoot and repair the types of breakdowns they will find on the job. The program covers air conditioning, temperature and humidity control and air circulators, and equipment installation — and emphasizes commercial reach-in and walk-in refrigeration units. Students also take introductory courses in electricity, electric motors and refrigeration theory.

**Types of Jobs**: Refrigeration equipment mechanic (installation, maintenance, repair), refrigeration equipment estimator, equipment sales.

FIRST SEMESTER

| | | | Credits |
|---|---|---|---|
| ACR | 511 | Introduction to Refrigeration | 5 |
| ELT | 531 | Air Conditioning/Refrigeration Electricity | 6 |
| MTH | 710 | Technical Mathematics I | |
| | | or | 3 |
| MTH | 103 | College Algebra & Trigonometry I | |
| ENL | 711 | Communications | |
| | | or | 3 |
| ENL | 111 | English Composition I | |
| | | | 17 |

SECOND SEMESTER

| | | | Credits |
|---|---|---|---|
| ACR | 521 | Commercial Refrigeration Systems | 4 |
| ACR | 522 | Installation & Service Problems – Commercial | 4 |
| ELT | 541 | Electric Motors & Refrigeration Controls | 5 |
| PHS | 500 | Physics Survey | 3 |
| PED | | Physical Education | 1 |
| | | | 17 |

PROGRAM OBJECTIVES

The goal of this program is to prepare students for employment in the field of residential, commercial, and industrial refrigeration installation, maintenance, and service.

A graduate of the program should be able to:

1. identify and demonstrate correct use and care of refrigeration tools, materials, and equipment.
2. read and interpret electrical schematics and use schematics when installing equipment.
3. troubleshoot refrigeration equipment using standard procedures.
4. demonstrate familiarity with the accepted safety standards and requirements of the industry.
5. write clear, concise, legible, and accurate memos, work orders, and reports.
6. demonstrate a responsible attitude in relationships with employers and co-workers and toward the world of work.
7. use elementary math operations (addition, subtraction, multiplication, division), including decimals, fractions, and conversions in refrigeration work.
8. demonstrate a working knowledge of the service and installation of frozen food cabinets, walk-in coolers and ice machines used in supermarkets and restaurants.
9. understand changing air conditioning/refrigeration technology and develop new skills when necessary.
10. demonstrate a knowledge of heat pump installation and service.

## ARCHITECTURAL TECHNOLOGY (AT)

**Associate Degree/2 years**

This program offers training in architectural drafting principles and practices. Students learn to create residential and commercial working drawings. It also includes design fundamentals, structural calculations and site planning theory.

**Types of Jobs:** Architectural drafting, estimator, detailer, or specification writer in private practice, corporate departments, public bureaus, construction firms, landscape architecture firms, and engineering fields.
**Recommended High School Subjects:** Two years of algebra, one year of science.

FIRST SEMESTER

| | | | Credits |
|---|---|---|---|
| ARC | 111 | Statics | 3 |
| ARC | 112 | Architectural Graphics I | 4 |
| ARC | 115 | Working Drawings - Residential | 3 |
| ARC | 116 | Building Materials I | 2 |
| ENL | 111 | English Composition I | 3 |
| MTH | 103 | College Algebra & Trigonometry I | 3 |
| | | | 18 |

SECOND SEMESTER

| | | | Credits |
|---|---|---|---|
| ARC | 122 | Architectural Graphics II | 3 |
| ARC | 121 | Structures - Wood | 2 |
| ARC | 125 | Working Drawings - Commercial | 3 |
| ARC | 232 | Building Materials II | 3 |
| ENL | 121 | English Composition II | 3 |
| MTH | 104 | College Algebra & Trigonometry II | 3 |
| | | | 17 |

THIRD SEMESTER

| | | | Credits |
|---|---|---|---|
| ARC | 236 | Design Studio I | 5 |
| ARC | 237 | Seminar in Architectural History | 5 |
| ARC | 238 | Structures - Steel | 3 |
| ARC | 233 | Building Equipment I | 3 |
| PED | | Physical Education | 1 |
| | | | 17 |

FOURTH SEMESTER

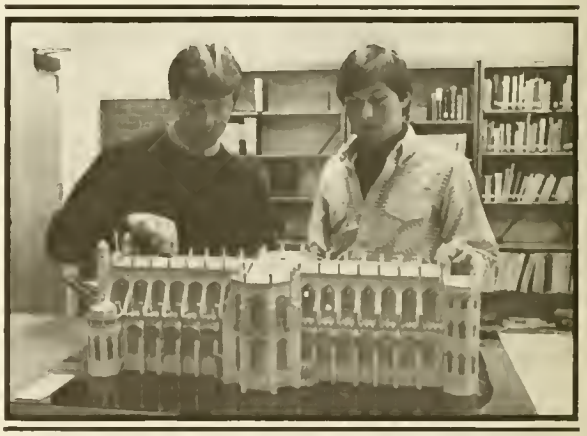
| | | | Credits |
|---|---|---|---|
| ARC | 242 | Building Equipment II | 3 |
| ARC | 244 | Professional Administration & Contract Documents | 3 |
| ARC | 246 | Design Studio II | 6 |
| ARC | 247 | Structures - Concrete | 3 |
| PED | | Physical Education | 1 |
| | | | 16 |

### PROGRAM OBJECTIVES

The general objective of the Architectural Technology program is to give students the academic and practical training needed for a variety of careers. Students develop the entry-level skills needed for employment as architectural technicians. The program may also serve as a basis for additional education in such disciplines as architecture, architectural engineering, landscape architecture, urban design and planning, interior design and building construction.

A graduate of the Architectural Technology program should be able to:

1. understand and appreciate visual art.
2. demonstrate a responsible attitude toward the wise and efficient use of our natural resources.
3. demonstrate mastery of the skills needed for architectural presentations — including drawing, drafting, and model building.
4. demonstrate knowledge of building structure, materials, and methods of construction.
5. perform first order structural calculations related to wood, steel, and concrete.
6. demonstrate working knowledge of the environmental systems of structures (water, air quality, etc.); demonstrate skills in designing these systems.
7. explain professional practice and administration.
8. demonstrate basic knowledge of architectural design and planning.
9. apply working knowledge of site engineering and design.
10. demonstrate knowledge of architectural terminology and skills in verbal, written and visual communications.
11. use the mathematical skills needed in this field and math skills necessary for the development of visualization skills and logical thought processes.
12. demonstrate knowledge of a lifetime sport which will provide recreation and promote physical fitness.



## AUTO BODY REPAIR (AB)

**Certificate/2 years**

Auto Body Repair prepares students for employment and advancement in this field. Students develop skills in using tools and equipment through practical experience in the College's shop. The program covers the theory and skills of sheet metal repair, sanding, and applying fillers, primers and paint. It includes skills training in shrinking, stretching and welding, panel installation, interior trim and glass replacement. Students also develop skills in frame and steering alignment and in damage estimating and repair.

**Types of Jobs**: Work for insurance companies, repair shops, dealerships and self-employment.

FIRST SEMESTER

| | | | Credits |
|---|---|---|---|
| ABC | 713 | Basic Auto Body (8 weeks) | 7 |
| ABC | 714 | Metal Work (8 weeks) | 7 |
| MTH | 710 | Technical Mathematics I | 3 |
| | | | 17 |

SECOND SEMESTER

| | | | Credits |
|---|---|---|---|
| ABC | 723 | Auto Body Maintenance (8 weeks) | 7 |
| ABC | 724 | Panel Alignment (8 weeks) | 7 |
| ENL | 711 | Communications | 3 |
| | | | 17 |

THIRD SEMESTER

| | | | Credits |
|---|---|---|---|
| ABC | 833 | Metal Work and Filling (8 weeks) | 7 |
| ABC | 834 | Painting (8 weeks) | 7 |
| | | Optional Elective | 0/3 |
| | | | 14/17 |

FOURTH SEMESTER

| | | | Credits |
|---|---|---|---|
| ABC | 843 | Tools, Equipment and Collision Repairs (8 weeks) | 7 |
| ABC | 844 | Painting and Estimating (8 weeks) | 7 |
| | | Optional Elective | 0/3 |
| | | | 14/17 |

Co-op Options:
Alternating
Parallel
Summer

PROGRAM OBJECTIVES

The general goal of this program is to prepare students for careers in auto body repair, collision appraisal and shop management.

A graduate of the Auto Body Repair program should be able to:

1. write clear, concise, legible, and accurate repair orders, estimates, technical reports, and business letters.
2. demonstrate skill in basic communication and the ability to speak logically; use verbal communication skills in promoting sales and service and in developing leadership skills.

3. maintain service records and customer files.
4. identify factors involved in managing an auto body repair shop, including personnel, equipment, and customer relations.
5. diagnose common paint problems and make necessary repairs.
6. make automotive collision repairs to sheet metal components.
7. make repairs to automotive glass, upholstery, trim and related components.
8. demonstrate both efficiency and quality in automotive refinishing work.
9. diagnose and repair mechanical parts, other than sheet metal, damaged by collision.
10. demonstrate a responsible attitude toward auto body repair and the world of work.
11. use basic math skills (addition, subtraction, multiplication, division) including decimals, fractions, and conversions in auto body repair.

## AUTOMOTIVE MECHANICS (AM)
**Certificate/2 years**

The Automotive program trains students in the skills needed to service and repair light commercial and passenger vehicles. The program emphasizes both theory and practical skills. Students develop skills in power train, steering, brakes, ignition, carburetion, engines and electrical components and assemblies.

**Types of Jobs:** General auto mechanic or technician in a dealership, independent garage, fleet operation, service station, self-employment.

FIRST SEMESTER

| | | Credits |
|---|---|---|
| AMT 510 | Principles of Engine Systems I (8 weeks) | 6 |
| AMT 511 | Principles of Engine Systems II (8 weeks) | 6 |
| MTH 710 | Technical Mathematics I | 3 |
| | | 15 |

SECOND SEMESTER

| | | Credits |
|---|---|---|
| AMT 520 | Principles of Chassis Systems (8 weeks) | 6 |
| AMT 521 | Principles of Power Train & Accessories (8 weeks) | 6 |
| ENL 711 | Communications | 3 |
| | | 15 |

THIRD SEMESTER

| | | Credits |
|---|---|---|
| AMT 630 | Power Train & Accessories Service (8 weeks) | 6 |
| AMT 631 | Engine System Service (8 weeks) | 6 |
| | Elective | 3 |
| | | 15 |

FOURTH SEMESTER

| | | Credits |
|---|---|---|
| AMT 640 | Chassis System Service (8 weeks) | 6 |
| | Automotive Service Elective* | 6 |
| | Elective | 3 |
| | | 15 |

*Automotive Service Elective - Depending on student interest and enrollment, a minimum of one and a maximum of two of the following courses will be offered during a given semester.

AMT 641 Automatic Transmissions and Air Conditioning Service (8 weeks)
AMT 642 Engine and Electrical Overhaul (8 weeks)
AMT 643 Wheel Alignment and Advanced Chassis Service (8 weeks)

Co-op Options:
Alternating
Parallel
Summer

PROGRAM OBJECTIVES

The goal of this program is to prepare the student for jobs in the automotive field. The program prepares students to take written certification exams — for example, the National Institute for Automotive Service Excellence exam — and the Pennsylvania Vehicle Safety Inspection exams — written and practical — for certification as vehicle safety inspectors.

A graduate of the Automotive program should be able to:

1. diagnose and repair common malfunctions of systems and components on popular makes of automobiles.
2. diagnose and repair malfunctions and wear in one of the following specialized automotive service areas:
   a. engines
   b. automatic transmissions
   c. air conditioning
3. test, adjust and repair engine electrical, fuel and emission control components.
4. interpret wiring diagrams, test and repair starting, charging, lighting and accessory systems of vehicles.
5. use elementary math operations (addition, subtraction, multiplication, division) including decimals, fractions, and conversions in automotive work.
6. demonstrate the ability to write letters of application, resumes, memos, work orders and reports; recognize current forms and styles of the above.
7. demonstrate a responsible attitude toward the automotive service and manufacturing industry and the world of work.

## AUTOMOTIVE TECHNOLOGY (AU)

**Associate Degree/2 years**

This program covers advanced operating theories of automotive systems and components. Students learn to apply automotive operating principles and to diagnose malfunctions in automotive systems. The program emphasizes the development of skills in service, repair and test procedures using modern equipment and special tools. Business management and specialized service courses prepare students for advancement in the automotive field.

**Types of Jobs:** Dealership service specialist, assistant manager, skilled jobs in automotive manufacturing, service equipment representative, rebuilding shop assembler, repair shop operator, parts department manager.
**Recommended High School Subjects:** One course in algebra for career students, two years of algebra for transfer students.

| FIRST SEMESTER | | | Credits |
|---|---|---|---|
| AMT | 510 | Principles of Engine Systems I (8 weeks) | 6 |
| AMT | 511 | Principles of Engine Systems II (8 weeks) | 6 |
| ENL | 111 | English Composition I | 3 |
| MTH | 500 | Technical Mathematics (2 yr. career) | |
| | | or | 3 |
| MTH | 103 | College Algebra & Trigonometry I (4 yr. transfer) | |
| | | | 18 |

| SECOND SEMESTER | | | Credits |
|---|---|---|---|
| AMT | 520 | Principles of Chassis Systems (8 weeks) | 6 |
| AMT | 521 | Principles of Power Train & Accessories (8 weeks) | 6 |
| EDT | 101 | Mechanical Drawing | 2 |
| MTH | 105 | Intermediate Algebra (2 yr. career) | |
| | | or | 3 |
| MTH | 104 | College Algebra & Trigonometry II (4 yr. transfer) | |
| PED | | Physical Education | 1 |
| | | | 18 |

| THIRD SEMESTER | | | Credits |
|---|---|---|---|
| AMT | 630 | Power Train and Accessory Service (8 weeks) | 6 |
| AMT | 631 | Engine Systems Service (8 weeks) | 6 |
| ENL | 201 | Technical Writing | 3 |
| MGT | 247 | Small Business Management | 3 |
| | | | 18 |

| FOURTH SEMESTER | | | Credits |
|---|---|---|---|
| AMT | 640 | Chassis Systems Service (8 weeks) | 6 |
| | | Automotive Service Elective* | 6 |
| PHS | 500 | Physics Survey (2 yr. career) | |
| | | or | 3/4 |
| PHS | 100 | Physics Mechanics (4 yr. transfer) | |
| PED | | Physical Education | 1 |
| | | | 16/17 |

**Mathematics/Science Sequence**

**Career**

| | | |
|---|---|---|
| MTH | 500 | Technical Math |
| MTH | 105 | Intermediate Algebra |
| PHS | 500 | Physics Survey |

**Transfer**

| | | |
|---|---|---|
| MTH | 103 | College Algebra & Trigonometry I |
| MTH | 104 | College Algebra & Trigonometry II |
| PHS | 100 | Physics Mechanics |

It is suggested all math deficiencies (as identified on the College's placement exams) be made up prior to enrollment due to the course load and technical nature of the program.

*Automotive Service Elective - Depending on student interest and enrollment, a minimum of one and a maximum of two of the following courses will be offered during a given semester.

| | | |
|---|---|---|
| AMT | 641 | Automotive Transmissions and Air Conditioning Service (8 weeks) |
| AMT | 642 | Engine and Electrical Overhaul (8 weeks) |
| AMT | 643 | Wheel Alignment and Advanced Chassis Service (8 weeks) |

Co-op Options: Alternating Parallel Summer

### PROGRAM OBJECTIVES

The goal of this program is to prepare students for jobs in the automotive field. The program also prepares students to take written certification exams — for example, the National Institute for Automotive Service Excellence exam — and the Pennsylvania Vehicle Safety Inspection exams — written and practical — for certification as vehicle safety inspectors.

A graduate of Automotive Technology should be able to:

1. diagnose and repair common malfunctions of systems and components on popular makes of automobiles.
2. diagnose and repair malfunctions and wear in one of the following specialized automotive service areas:
   a. engines
   b. automatic transmissions and air conditioning
   c. alignment and suspension
3. apply basic laws of physics and scientific principles to automotive systems and components when diagnosing problems and in product development.
4. record engineering data in mathematical terms and solve basic problems using technical mathematics, elementary algebra, and trigonometry.
5. interpret engineering data presented in graphs or charts, algebraic expressions, or proportional relationships.
6. create and interpret basic engineering drawings.
7. demonstrate knowledge of good management practices in the automotive service shop, including personnel, equipment, shop layout, and customer relations.
8. maintain automotive service records, dealership warranty procedures, and customer files.
9. demonstrate skill in basic verbal communications and the ability to speak logically; use various types of verbal communication skills in sales and service and in developing leadership skills.
10. write clear, concise, and accurate repair orders, technical reports, service advertising copy, business memoranda, and business letters.
11. maintain business records, explain the factors to be considered in starting a new business, and state good management practices.
12. demonstrate knowledge of a lifetime sport which will provide recreation and promote physical fitness.
13. demonstrate a responsible attitude toward the automotive service and manufacturing industry and the world of work.

## AVIATION MAINTENANCE TECHNICIAN (AC)

**Certificate/2 years**

This program prepares students for employment as aircraft and powerplant maintenance technicians. Students develop practical skills in aircraft powerplant maintenance and troubleshooting. The program also covers powerplant and maintenance theory. This program is approved by the Federal Aviation Administration, and as a graduate the student will be qualified to take the examinations for the Airframe and Powerplant Maintenance Certificate. See page 5 for special admission requirements for this program.

**Types of Jobs:** Maintenance technician for airlines, fixed base operators, and manufacturer's services.

FIRST SEMESTER

| | | | Credits |
|---|---|---|---|
| APC | 512 | Turbine Engines | 3 |
| APC | 513 | Basic Electricity | 3 |
| APC | 514 | Federal Air Regulations | 2 |
| APC | 515 | Material and Processes | 3 |
| APC | 516 | Aircraft Servicing/Fluid Liners and Fittings | 3 |
| APC | 517 | Weight and Balance/Physics | 2 |
| MTH | 515 | General Aviation Math | 3 |
| | | | 19 |

SECOND SEMESTER

| | | | Credits |
|---|---|---|---|
| APC | 522 | Engine Ignition Systems | 3 |
| APC | 523 | Engine Induction and Exhaust Systems | 2 |
| APC | 524 | Engine Fuel Systems | 3 |
| APC | 525 | Propellers | 3 |
| APC | 526 | Reciprocating Engines and Engine Inspection | 7 |
| EDT | 104 | Aircraft Drawing | 2 |
| | | | 20 |

THIRD SEMESTER

| | | | Credits |
|---|---|---|---|
| APC | 633 | Engine Cooling and Lubricating | 4 |
| APC | 634 | Engine Fire Protection and Instruments | 2 |
| APC | 635 | Engine Electrical | 3 |
| APC | 636 | Aircraft Electrical | 4 |
| APC | 637 | Aircraft Covering, Finishes and Welding | 3 |
| APC | 638 | Aircraft Assembly and Rigging/Inspection | 3 |
| | | | 19 |

FOURTH SEMESTER

| | | | Credits |
|---|---|---|---|
| APC | 642 | Aircraft Sheet Metal and Wood Structures | 6 |
| APC | 643 | Aircraft Landing Gear, Hydraulics Pneumatics, and Position/Warning | 6 |
| APC | 644 | Aircraft Communications/Navigation and Instruments | 2 |
| APC | 645 | Aircraft Atmosphere Control and Ice/Rain Control | 3 |
| APC | 646 | Aircraft Fuel and Fire Protection | 2 |
| | | | 19 |

PROGRAM OBJECTIVES

The objective of the Aviation Maintenance Technician program is to prepare students to take the written, oral, and practical Federal Aviation Administration (F.A.A.) Examination. Students master the skills needed for aviation maintenance jobs.

A graduate of the Aviation Maintenance Technician program should be able to:

1. prepare F.A.A. maintenance forms accurately.
2. locate specific information in various aviation publications.
3. read and understand aircraft and powerplant service publications.
4. recognize the need for accuracy and thoroughness in work.
5. demonstrate professional skills in inspection, maintenance and repair.
6. observe and practice safety habits at all times.
7. demonstrate correct use of basic hand tools, special tools, and required testing equipment.
8. use mathematics and theory in aviation maintenance work.
9. list, define, and correctly use aviation maintenance terminology.
10. maintain high professional standards — as established by the F.A.A. and studied in the program — in aviation maintenance work.

## AVIATION TECHNOLOGY (AD)

**Associate Degree/2 years**

This program prepares students for employment and advancement in aviation maintenance. Students develop practical skills in airframe and powerplant. Academic courses — in English and mathematics as well as in aviation — help students to understand the theoretical aspects of aviation maintenance.

As graduates students will be qualified to take the examination for the Airframe and Powerplant, F.A.A. (Federal Aviation Administration) Certificate. Graduates may also transfer to a baccalaureate program at a four-year college. (See page 5 for special admission requirements for this program.)

**Types of Jobs:** Immediate employment as maintenance technicians for airlines or fixed base operators. After several years of experience, graduates with this educational background may advance to positions as shop supervisors, aircraft salespersons, manufacturer service representatives, or engineering assistants in research and development.

**Recommended High School Subjects:** Three years of English and two years of high school algebra. A student cannot enter this program with any reading or math deficiencies because of the technical aspects of the program.

FIRST SEMESTER

| | | | Credits |
|---|---|---|---|
| APC | 512 | Turbine Engines | 3 |
| APC | 513 | Basic Electricity | 3 |
| APC | 514 | Federal Air Regulations | 2 |
| APC | 515 | Material and Processes | 3 |
| APC | 516 | Aircraft Servicing/Fluid Liners and Fittings | 3 |
| APC | 517 | Weight and Balance/Physics | 2 |
| MTH | 515 | General Aviation Math | 3 |
| | | | 19 |

SECOND SEMESTER

| | | | Credits |
|---|---|---|---|
| APC | 522 | Engine Ignition Systems | 3 |
| APC | 523 | Engine Induction and Exhaust Systems | 2 |
| APC | 524 | Engine Fuel Systems | 3 |
| APC | 525 | Propellers | 3 |
| APC | 526 | Reciprocating Engines and Engine Inspection | 7 |
| EDT | 104 | Aircraft Drawing | 2 |
| | | | 20 |

SUMMER SESSION I

| | | | Credits |
|---|---|---|---|
| ENL | 111 | English Composition I | 3 |
| MTH | 103 | College Algebra & Trigonometry I | 3 |
| PED | | Physical Education | 1 |
| | | | 7 |

SUMMER SESSION II

| | | | Credits |
|---|---|---|---|
| ENL | 121 | English Composition II | |
| | | or | 3 |
| ENL | 201 | Technical Writing | |
| PED | | Physical Education | 1 |
| | | Elective* | 3/4 |
| | | | 7/8 |

THIRD SEMESTER

| | | | Credits |
|---|---|---|---|
| APC | 633 | Engine Cooling and Lubricating | 4 |
| APC | 634 | Engine Fire Protection and Instruments | 2 |
| APC | 635 | Engine Electrical | 3 |
| APC | 636 | Aircraft Electrical | 4 |
| APC | 637 | Aircraft Covering, Finishes and Welding | 3 |
| APC | 638 | Aircraft Assembly and Rigging/Inspection | 3 |
| | | | 19 |

FOURTH SEMESTER

| | | | Credits |
|---|---|---|---|
| APC | 642 | Aircraft Sheet Metal and Wood Structures | 6 |
| APC | 643 | Aircraft Landing Gear, Hydraulics, Pneumatics, and Position/Warning | 6 |
| APC | 644 | Aircraft Communications/Navigation and Instruments | 2 |
| APC | 645 | Aircraft Atmosphere Control and Ice/Rain Control | 3 |
| APC | 646 | Aircraft Fuel and Fire Protection | 2 |
| | | | 19 |

*MGT 110 Principles of Business or
PHS 100 Physics Mechanics are suggested.

All deficiencies (as identified in the College's placement exams) must be made up prior to enrolling in the Aviation programs.

### PROGRAM OBJECTIVES

The major objectives of the Aviation degree program are: (1) to prepare students to pass the written, oral and practical Federal Aviation Administration (F.A.A.) Examination for the Airframe and Powerplant Maintenance Certificate; (2) to train students in the skills needed for jobs in aircraft maintenance; (3) to provide knowledge needed for supervisory and technical jobs.

A graduate of the Aviation Technology degree program should be able to:

1. prepare F.A.A. maintenance forms accurately.
2. locate specific information in various aviation publications and be able to interpret and apply the information.
3. read and understand aircraft and powerplant service publications.
4. recognize the need for accuracy and thoroughness — as defined by the F.A.A. — in work.
5. demonstrate standard inspection procedures, and maintenance and repair skills following F.A.A. guidelines.
6. demonstrate and practice safety habits at all times.
7. demonstrate correct use of basic hand tools, special tools, and required testing equipment.
8. use mathematics, blueprints, diagrams, and theory in aviation maintenance work.
9. list, define, and correctly use aviation maintenance terminology.
10. maintain high professional standards — as established by the F.A.A., the aviation industry, and through program instruction — in aviation maintenance and in dealing with the public.
11. demonstrate clear, concise writing ability in composing letters, shop orders, and technical reports.
12. evaluate consumer needs and relate them to current business procedures in aviation maintenance.
13. use current decision-making techniques and demonstrate the potential for managerial growth.
14. identify the need for physical fitness and positive leisure activities.

## BROADCASTING (BR)

**Associate Degree/2 years**

Announcers and newswriters from nearby radio stations assist faculty in teaching modern broadcasting techniques using the College's 100-watt FM educational radio station. Students learn to select and announce music, to broadcast news, to do interviews, sports and talk shows and to develop advertising. In addition, they learn sales and management operations which are part of the business side of broadcasting. Background courses in management, government, economics, sociology, and psychology broaden students' perspectives and prepare them for the possibility of advanced study.

**Types of Jobs:** Radio or television announcer, disc jockey, news commentator, public relations assistant, advertising copywriter.
*GENERAL ELECTIVES are courses chosen from outside your program of concentration.

FIRST SEMESTER

| | | | Credits |
|---|---|---|---|
| BRC | 110 | Introduction to Broadcasting | 3 |
| BRC | 115 | Technical Commercial Radio Operation | 3 |
| ENL | 111 | English Composition I | 3 |
| ENL | 202 | Fundamentals of Speech | 3 |
| SEC | 111 | Typewriting I | 3 |
| | | | 15 |

SECOND SEMESTER

| | | | Credits |
|---|---|---|---|
| BRC | 125 | Introduction to Radio Station Operation | 3 |
| BRC | 233 | Announcing Techniques | 3 |
| ENL | 121 | English Composition II | 3 |
| GOV | 241 | State and Local Government | 3 |
| SOC | 111 | Introduction to Sociology | 3 |
| PED | | Physical Education | 1 |
| | | | 16 |

THIRD SEMESTER

| | | | Credits |
|---|---|---|---|
| BRC | 123 | News Writing for Radio | 3 |
| BRC | 235 | Radio Station Operation and Management | 3 |
| ECO | 201 | Principles of Economics | |
| | | or | 3 |
| MGT | 110 | Principles of Business | |
| GOV | 231 | American Government - National | 3 |
| PED | | Physical Education | 1 |
| | | Elective-General* | 3/4 |
| | | | 16/17 |

FOURTH SEMESTER

| | | | Credits |
|---|---|---|---|
| BRC | 241 | Survey of Radio Industry | 2 |
| BRC | 242 | Community Aspects of Broadcasting | 3 |
| ADV | 101 | Principles of Advertising | 3 |
| MGT | 247 | Small Business Management | 3 |
| PSY | 111 | General Psychology | |
| | | or | 3 |
| MGT | 235 | Business Psychology | |
| | | Elective-General* | 3 |
| | | | 17 |

Co-op Options:
Parallel
Summer

PROGRAM OBJECTIVES

The general objective of the Broadcasting program is to prepare students for jobs in the radio broadcasting industry in small or middle-size operations. Students are also prepared for jobs in related fields — for example, public relations — or for transfer to a baccalaureate degree program.

The graduate of the Broadcasting program should be able to:

1. demonstrate proficiency in selecting and announcing recorded music and demonstrate familiarity with several kinds of recorded musical forms.
2. demonstrate proficiency in using the tools of the broadcast industry — such as control room boards, microphones, and various types of tapes.
3. secure, write, and edit news for broadcasting and apply general knowledge of physical and social sciences.
4. demonstrate effective performance in various types of specialized radio announcing including news, interviews, sports, and talk shows.
5. describe and estimate the impact of the governmental control exercised by the Federal Communications Commission and the Federal Trade Commission.
6. demonstrate the ability to acquire and evaluate appropriate demographic information and design a broadcast facility based on such information.
7. evaluate the nature of advertising in the United States as it relates to the economy and create usable broadcast advertising.
8. describe the business basis of a broadcasting station, including operation of sales and management activities.
9. demonstrate both employee and leadership human relations skills in a commercial business setting.
10. explain the philosophical concepts of U.S. broadcasting in contrast to those of other countries and relate this to the U.S. form of government.
11. describe and analyze the history of the broadcast industry as it relates to current forms of radio broadcasting.
12. assess the community responsibilities of broadcast facilities and the need for public service based on F.C.C. regulations.
13. use theory and operations skills required by the F.C.C. of all broadcasting equipment operators.
14. demonstrate the ability to apply the fundamentals of oral and written communications.
15. demonstrate the ability to think and speak extemporaneously.
16. demonstrate the ability to prepare effective letters of application, resumes, and audition tapes.
17. demonstrate knowledge of a lifetime sport which will provide recreation and promote physical fitness.

## BUSINESS MANAGEMENT (BM)

**Associate Degree/2 years**

This program provides basic business knowledge. It covers management theory and application, business concepts, and the effect of business on the economy.

**Types of Jobs:** Junior-executive or management trainee positions in manufacturing, retailing, finance, banking, insurance, marketing, and government.

FIRST SEMESTER

| | | | Credits |
|---|---|---|---|
| MGT | 110 | Principles of Business* | 3 |
| MGT | 111 | Business Mathematics | 3 |
| ACC | 112 | Accounting I* | 3 |
| SEC | 111 | Typewriting I | 3 |
| ENL | 111 | English Composition I | 3 |
| PED | | Physical Education | 1 |
| | | | 16 |

SECOND SEMESTER

| | | | Credits |
|---|---|---|---|
| MGT | 230 | Business Communications | 3 |
| ACC | 122 | Accounting II | 3 |
| CSC | 118 | Fundamentals of Computer Science* | 3 |
| ECO | 201 | Principles of Economics* | 3 |
| PED | | Physical Education | 1 |
| | | Elective-Social Science/Humanities | 3 |
| | | | 16 |

THIRD SEMESTER

| | | | Credits |
|---|---|---|---|
| MGT | 231 | Business Law I* | 3 |
| ACC | 230 | Managerial Accounting | 3 |
| ENL | 202 | Fundamentals of Speech | 3 |
| | | Elective-Computer Science* | 3 |
| | | Elective* | 3 |
| | | | 15 |

FOURTH SEMESTER

| | | | Credits |
|---|---|---|---|
| MGT | 125 | Finance* | 3 |
| MGT | 241 | Business Law II | 3 |
| MGT | 248 | Supervision and Human Relations | 3 |
| MKT | 240 | Marketing | 3 |
| | | Elective* | 3 |
| | | | 15 |

*Equivalent AIB (American Institute of Banking) courses may be substituted with Division approval.

Co-op Options:
Parallel
Summer

### EVENING PROGRAM

Courses required for the associate degree in Business Management are also offered in the evenings for the convenience of students who are unable to attend classes during the day. Students may complete all courses required for a degree in Business Management by enrolling in evening courses on a part-time basis. Part-time students may require more than two years to complete the program.

PROGRAM OBJECTIVES

The general objective of this program is to prepare the student for employment in business management. As an alternative, graduates may pursue advanced degrees. The program will also upgrade the skills of those now employed in this field.

The graduate should be able to:

1. demonstrate specialized knowledge and skills needed for jobs in business management.
2. demonstrate potential for managerial growth and the ability to use the tools of modern decision making.
3. demonstrate knowledge of profit motives.
4. apply generally accepted accounting principles.
5. identify, compare, and use financial statements and management information systems.
6. evaluate consumer needs, and relate them to current business procedures.
7. relate in a positive manner to supervisors, peers, and subordinates.
8. apply knowledge of electronic data processing systems in making managerial decisions.
9. demonstrate skills in effective verbal and written communication.
10. identify the laws affecting business.
11. identify the need for physical fitness and positive leisure activities.

## CARPENTRY AND BUILDING CONSTRUCTION TECHNOLOGY (CB)

**Associate Degree/2 years**

This program covers the theoretical and practical aspects of light building construction. Students learn the principles and techniques of light-frame carpentry and masonry. The program emphasizes design, construction, cost estimation, and management.

**Types of Jobs:** Positions leading to supervisor, building technician, or construction superintendent.
**Recommended High School Subjects:** Two years of algebra, one year of science. One year of geometry is desirable.
*GENERAL ELECTIVES are courses chosen from outside your program of concentration.

FIRST SEMESTER

| | | | Credits |
|---|---|---|---|
| BCT | 111 | Woodworking for Carpenters | 4 |
| BCT | 112 | Construction Carpentry | 4 |
| ENL | 111 | English Composition I | 3 |
| MTH | 103 | College Algebra & Trigonometry I | 3 |
| PED | | Physical Education | 1 |
| | | | 15 |

SECOND SEMESTER

| | | | Credits |
|---|---|---|---|
| BCT | 121 | Estimating and Blueprints | 2 |
| BCT | 122 | Block Construction | 6 |
| ENL | 121 | English Composition II | 3 |
| MTH | 104 | College Algebra & Trigonometry II | 3 |
| PED | | Physical Education | 1 |
| | | | 15 |

THIRD SEMESTER

| | | | Credits |
|---|---|---|---|
| BCT | 231 | Roof-framing Theory | 3 |
| BCT | 232 | Brick Construction | 5 |
| ELT | 110 | Electricity for the Trades | 3 |
| ECO | 201 | Principles of Economics | 3 |
| PHS | 100 | Physics-Mechanics | 4 |
| | | | 18 |

FOURTH SEMESTER

| | | | Credits |
|---|---|---|---|
| BCT | 241 | Advanced Carpentry | 4 |
| BCT | 242 | Building Construction Technology | 6 |
| BCT | 243 | Concrete Construction | 3 |
| | | Elective-General* | 3/4 |
| | | | 16/17 |

Co-op Options:
Alternating
Parallel
Summer

PROGRAM OBJECTIVES

The general objective is to prepare students for jobs in the building construction industry. Students develop an understanding of all basic trade skills and acquire the background needed to solve trade-related problems. Based on knowledge of the construction industry, their skills and interests, students will be able to plan their careers. This program may serve as a basis for continued education leading to a Bachelor's Degree in fields such as building construction and/or vocational education. Students will also learn and practice basic management skills in building technology.

A graduate of the Building Construction Technology program should be able to:

1. write clear, concise, legible, and accurate technical reports and use verbal communication skills in job-related activities.
2. demonstrate the basic manipulative skills of the trade needed to layout and plan work and to erect building frames.
3. interpret and prepare plans, drawings, specifications, lines, symbols, and abbreviations on working drawings or blueprints.
4. demonstrate his/her ability to lay out and erect a platform or western frame structure.
5. analyze specifications and contract drawings; make accurate quantity take-offs and labor estimations to develop an estimated construction cost for a building project.
6. demonstrate basic knowledge and skills in masonry and concrete construction.
7. describe various types of materials and methods used in the construction trade.
8. describe the organization, financing, labor relations, selling, pricing, customer service, management, and other aspects of business.
9. describe the complexity of the building construction industry, the relationships among the various trades; methods of communication and coordination among all trades and professions in the industry.
10. solve building construction problems using algebra and trigonometry.
11. apply scientific procedures learned in physics to building construction problems.
12. demonstrate knowledge of a lifetime sport which will provide recreation and promote physical fitness.

## CIVIL ENGINEERING TECHNOLOGY (CT)

**Associate Degree/2 years**

This program trains students in the skills needed to assist civil engineers in planning, designing and building highways, railroads, bridges, airfields, buildings, and dams. Experience with modern equipment prepares students to meet the challenge of recent technical developments.

**Types of Jobs:** Engineering technician, surveyor, inspector, drafting, cartographer, design technician, and photogrammetrist.
**Recommended High School Subjects:** Two years of algebra, one year of science.
*GENERAL ELECTIVES are courses chosen from outside your program of concentration. (Communications, Humanities, Social Science, Mathematics, Science, Allied Health, Business or Computer Science.)

FIRST SEMESTER

| | | | Credits |
|---|---|---|---|
| CET | 111 | Materials of Construction | 2 |
| CET | 112 | Engineering Drawing | 3 |
| CET | 113 | Introductory Surveying | 2 |
| ENL | 111 | English Composition I | 3 |
| MTH | 103 | College Algebra & Trigonometry I | 3 |
| PED | | Physical Education | 1 |
| | | Elective-General* | 3/4 |
| | | | 17/18 |

SECOND SEMESTER

| | | | Credits |
|---|---|---|---|
| CET | 121 | Plane Surveying | 4 |
| CET | 122 | Topographic Drawing and Cartography | 3 |
| CET | 244 | Photogrammetry | 3 |
| ENL | 121 | English Composition II | 3 |
| MTH | 104 | College Algebra & Trigonometry II | 3 |
| PED | | Physical Education | 1 |
| | | | 17 |

THIRD SEMESTER

| | | | Credits |
|---|---|---|---|
| CET | 231 | Route Surveying | 4 |
| CET | 232 | Origin, Distribution & Behavior of Soils | 3 |
| CET | 233 | Statics | 3 |
| CET | 234 | Highway Engineering Technology | 3 |
| PHS | 100 | Physics-Mechanics | 4 |
| | | | 17 |

FOURTH SEMESTER

| | | | Credits |
|---|---|---|---|
| CET | 241 | Advanced Surveying | 3 |
| CET | 242 | Fluid Mechanics | 3 |
| CET | 243 | Strength of Materials | 3 |
| ECO | 201 | Principles of Economics | 3 |
| CSC | 100 | FORTRAN IV Programming | 3 |
| | | Elective-General* | |
| | | or | 3 |
| | | Approved Co-op | |
| | | | 18 |

Co-op Options:
Parallel
Summer

PROGRAM OBJECTIVES

The general objective of the Civil Engineering Technology program is to prepare students for technical-level positions in the field of civil engineering. The program also provides an overview of the field and prepares students for advanced study.

A graduate of the Civil Engineering Technology program should be able to:

1. distinguish between various types of surveys and select and use the proper instruments and methods for each type of survey. These will include boundary, control, construction, topographic and geodetic surveys.
2. construct a cartographic and topographic map using recognized mapping procedures.
3. use aerial photographs in making engineering measurements and topographic maps.
4. apply basic criteria used to design and locate highways and estimate earthwork quantities for highway construction.
5. determine and use the engineering properties of the basic construction materials such as steel, concrete, wood, and soil.
6. understand the functions of basic structural components and be able to design these components to resist applied loads.
7. demonstrate a working knowledge of the mechanics of compressible and incompressible fluid flow and their applications in piping systems, pumps, open channels, and reservoirs.
8. communicate effectively through the skills learned in English Composition and Engineering Drawing.
9. use social science concepts for a better understanding of his or her self and to relate more effectively to others.
10. use algebra and trigonometry to solve problems related to civil engineering.
11. apply scientific procedures learned in physics in solving engineering problems.
12. recognize the need for physical fitness and lifelong recreational activities through physical education.
13. prepare the computer programs needed to solve engineering problems.

## CLERICAL STUDIES (BT)

**Certificate/1 year**
**(Starts in January of each year)**

This program provides the fundamentals of typewriting, machine calculation, word processing and clerical procedures. It also covers indexing principles, filing, and basic office techniques.

**Types of Jobs:** Clerk-typist, word processor, filing, general clerical, payroll work, Dictaphone transcription.

FIRST SEMESTER

| | | | Credits |
|---|---|---|---|
| SEC | 111 | Typewriting I | 3 |
| CLS | 717 | Clerical Procedures | 7 |
| ENL | 711 | Communications | 3 |
| | | Elective | 3 |
| | | | 16 |

SECOND SEMESTER

| | | | Credits |
|---|---|---|---|
| MGT | 111 | Business Mathematics | 3 |
| MGT | 230 | Business Communications | 3 |
| CLS | 728 | Clerical Workshop | 8 |
| SEC | 121 | Typewriting II | 3 |
| | | | 17 |

PROGRAM OBJECTIVES

The general objective of the Clerical Studies program is to prepare students for clerical positions.

The graduate should be able to:

1. demonstrate skills in performing routine office tasks.
2. write and speak clearly and effectively.
3. perform basic clerical office procedures.
4. demonstrate basic knowledge of modern office equipment and office supplies.
5. apply working knowledge of duplicating and other copying methods, word processing, and computational skills.
6. assess and influence behavior among supervisors, peers, and subordinates.
7. apply general knowledge of the social sciences, and understand their effect on our society.

## COMPUTER OPERATOR (CO)

**Certificate/1 year**

This program trains students in all aspects of data processing operations and the effective use of the equipment. The student is prepared for entry-level jobs in industry as a qualified computer operator. This program provides an option for those students who are interested in data processing careers, but who do not want to be programmers.

**Types of Jobs:** Computer operator, peripheral data processing equipment operator, operations manager, data and job control managers and technical sales representatives.

FIRST SEMESTER

| | | | Credits |
|---|---|---|---|
| COP | 713 | Computer Operations I | 6 |
| CSC | 118 | Fundamentals of Computer Science | 3 |
| ACC | 112 | Accounting I | 3 |
| SEC | 509 | Typewriting | 1 |
| ENL | 111 | English Composition I | 3 |
| | | | 16 |

SECOND SEMESTER

| | | | Credits |
|---|---|---|---|
| COP | 723 | Computer Operations II | 4 |
| COP | 724 | Computer Operations Internship | 2 |
| CSC | 120 | Business Computer Applications | 3 |
| ENL | 201 | Technical Writing | 3 |
| | | Elective - Computer Science | 3/4 |
| | | | 15/16 |

PROGRAM OBJECTIVES

The general objective of the Computer Operator program is to prepare the student for jobs in computer operations in such positions as computer operator, peripheral equipment operator, data entry clerk, or data controller.

The graduate should be able to:

1. operate computer systems.
2. demonstrate skills in technical writing.
3. relate in a positive manner to supervisors, peers, and subordinates.
4. use system utility programs.
5. interpret and manage data controls from data entry to completed output.
6. interpret and use written documentation for program execution.
7. apply job control language to perform computer jobs.
8. operate peripheral and other data processing equipment.
9. maintain operation logs and libraries.
10. perform routine housekeeping tasks in the computer area and general maintenance on the equipment.
11. apply generally accepted accounting principles.

## COMPUTER SCIENCE TECHNOLOGY (CS)

**Associate Degree/2 years**

This program trains the student in various electronic data processing systems. It provides a broad range of knowledge in programming techniques and experience in operating computer systems and peripheral data processing equipment. The curriculum offers a secondary background in business, accounting and management or math and science.

**Types of Jobs:** Computer programmer, junior systems analyst, sales representative, related technician.
**Recommended High School Subjects:** Two units of mathematics including algebra.
*GENERAL ELECTIVES are courses chosen from outside your program of concentration.

FIRST SEMESTER

| | | | Credits |
|---|---|---|---|
| CSC | 118 | Fundamentals of Computer Science*** | 3 |
| CSC | 119 | RPG Programming I | 3 |
| ACC | 112 | Accounting I*** | 3 |
| ENL | 111 | English Composition I | 3 |
| SEC | 509 | Typewriting | 1 |
| | | Mathematics Requirement** | 3/4 |
| | | | 16/17 |

SECOND SEMESTER

| | | | Credits |
|---|---|---|---|
| CSC | 127 | Assembler Language Programming | 4 |
| CSC | 128 | COBOL Programming I | 3 |
| ENL | 121 | English Composition II | 3 |
| PED | | Physical Education | 1 |
| | | Mathematics Requirement** | 3/4 |
| | | Elective-Math/Science/Business*** | 3/4 |
| | | | 17/19 |

THIRD SEMESTER

| | | | Credits |
|---|---|---|---|
| CSC | 234 | FORTRAN & Linear Programming | 3 |
| CSC | 245 | Computer Software Systems | 3 |
| CSC | 238 | COBOL Programming II | 3 |
| MTH | 201 | Elementary Statistics I | 3 |
| PED | | Physical Education | 1 |
| | | Elective-Math/Science/Business*** | 3/4 |
| | | | 16/17 |

FOURTH SEMESTER

| | | | Credits |
|---|---|---|---|
| CSC | 241 | Systems Analysis and Design | 4 |
| CSC | 249 | RPG Programming II | 3 |
| | | Elective-Computer Science*** | 3 |
| | | Elective-Math/Science/Business*** | 3/4 |
| | | Elective-General*/*** | 3/4 |
| | | | 16/18 |

**Students are encouraged to meet the 6 credit minimum in mathematics at the highest possible level. Suggested alternatives:
a. MTH 101-102 sequence (Intro. to Math) - minimum allowable math sequence.
b. MTH 103-104 sequence (College Algebra & Trigonometry I and College Algebra & Trigonometry II) - recommended on the basis of placement tests and for students wanting strong math background.
c. MTH 238-248 sequence (Calculus I and II) - recommended on the basis of placement tests and for students with strong high school backgrounds who want the highest level of mathematical preparation.

***Equivalent AIB (American Institute of Banking) courses may be substituted with Division approval.

Co-op Options:
Parallel
Summer

### EVENING PROGRAM

Courses required for the associate degree in Computer Science are also offered in the evenings for the convenience of students who are unable to attend classes during the day. Students may complete all courses required for a degree in Computer Science by enrolling in evening courses on a part-time basis. Part-time students may require more than two years to complete the program.

### PROGRAM OBJECTIVES

The general objective of the Computer Science program is to prepare students for jobs as computer programmers or junior systems analysts. As an alternative graduates may pursue advanced degrees. The program will also upgrade the skills of those employed in the field.

The graduate should be able to:

1. write effective, efficient computer programs in the RPG, COBOL, FORTRAN and Assembler languages.
2. demonstrate ability to reason logically, to analyze, to synthesize, and to evaluate technical information and to apply these processes.
3. demonstrate skills in verbal and written communications.
4. relate in a positive manner to supervisors, peers, and subordinates.
5. prepare written documentation of computer programs.
6. assist in the design of business systems.
7. use system software packages to execute computer jobs.
8. identify the concepts and organization of various operating systems.
9. design and incorporate data controls from data entry to completed output.
10. use interactive programming techniques.
11. perform basic operations on a computer system and related data processing equipment.
12. apply generally accepted accounting and mathematical principles.
13. apply general knowledge of the social sciences.
14. identify the need for physical fitness and positive leisure activities.

## CONSTRUCTION CARPENTRY (CC)

**Certificate/2 years**

This program provides training in carpentry and masonry skills. Students develop skills in the correct use of hand tools, portable power tools and portable power equipment — they also become licensed in the use of power activated tools. The program includes classroom instruction in construction methods, procedures and materials. Students gain experience through working on on and off-campus construction projects under the supervision of qualified instructors.

**Types of Jobs:** Apprentice carpenters or masons, with advancement possibilities, also employment in plants or factories where building units, components, or building materials are made or sold.

FIRST SEMESTER

| | | | Credits |
|---|---|---|---|
| CNC | 711 | Surveying, Layout & Blueprint Reading (8 weeks) | 2 |
| CNC | 712 | Concrete and Block (8 weeks) | 4 |
| CNC | 713 | Brick and Stone (8 weeks) | 6 |
| ENL | 711 | Communications | 3 |
| MTH | 710 | Technical Mathematics I | 3 |
| | | | 18 |

SECOND SEMESTER

| | | | Credits |
|---|---|---|---|
| CNC | 721 | Framing and Sheathing (8 weeks) | 6 |
| CNC | 722 | Exterior Finish (8 weeks) | 6 |
| ARC | 102 | Basic Architectural Drafting | 3 |
| | | | 15 |

THIRD SEMESTER

| | | | Credits |
|---|---|---|---|
| CNC | 831 | Interior Finish (8 weeks) | 6 |
| CNC | 832 | Interior Trim (8 weeks) | 6 |
| CNC | 833 | Blueprints and Specifications | 3 |
| | | Optional Elective | 0/3 |
| | | | 15/18 |

FOURTH SEMESTER

| | | | Credits |
|---|---|---|---|
| CNC | 841 | Specialty & Related Trades (8 weeks) | 4 |
| CNC | 842 | Practical Construction Experience (8 weeks) | 4 |
| CNC | 843 | Building Trades Estimating (8 weeks) | 3 |
| CNC | 844 | Personal & Job Orientation (8 weeks) | 3 |
| | | Optional Elective | 0/3 |
| | | | 14/17 |

PROGRAM OBJECTIVES

The general objective of this program is to train students in the basic skills and knowledge needed for entry-level jobs in building construction.

A graduate of the Construction Carpentry program should be able to:

1. demonstrate basic knowledge and skills in the use of the transit and other measuring devices for site preparation and building layout.
2. demonstrate basic knowledge and skills in masonry and concrete construction.
3. demonstrate basic knowledge and skills in the layout and construction of building framework and sheathing.
4. demonstrate basic knowledge and skills in the installation of exterior siding, roofing, trim and millwork, and building insulation.
5. demonstrate basic knowledge and skills in the installation of interior finish, floors, walls and ceilings.
6. demonstrate basic knowledge and skills in the installation of doors and interior trim; build and/or install cabinet work and finish stairways.
7. demonstrate basic knowledge of the trades related to the building industry — for example, ceramic tile and resilient floor installations.
8. look for, secure, and keep a job; understand the factors involved in self-employment and the importance of customer service; develop and work toward personal goals.
9. read and interpret blueprints and specifications, prepare basic architectural drawings, and estimate building costs.
10. use the basic skills of verbal and written communication needed to understand instructions and present ideas and instructions in a clear and logical manner.
11. use the basic math skills required on the job and needed to develop visualization skills and logical thought processes.
12. practice safe work habits, demonstrate responsible attitudes, and produce high quality work.

## DAIRY HERD MANAGEMENT (DY)

**Certificate/1 year**

The Dairy Herd Management program provides training in the skills needed to successfully manage and operate a dairy farm. The program covers all aspects of dairy farm management — from soil preparation and feed crop production to milk processing. Dairy farm management — accounting and decision making — are included. Whether students plan to return to their family farms or to work as herd managers for large dairy operations, this program offers them the necessary skills.

**Types of Jobs:** Dairy farm manager, dairy herds manager, farm manager (general), Dairy Herd Improvement Association field technician.

FIRST SEMESTER

| | | Credits |
|---|---|---|
| DHM 711 | Soils & Soil Fertility | 3 |
| DHM 712 | Forage Production | 3 |
| DHM 713 | Dairy Feeding and Management | 3 |
| DHM 714 | Dairy Herd Health | 3 |
| MTH 710 | Technical Mathematics I | 3 |
| | | 15 |

SECOND SEMESTER

| | | Credits |
|---|---|---|
| DHM 721 | Financing Dairy Enterprises | 3 |
| DHM 722 | Milking Management | 3 |
| DHM 723 | Farm Records and Analysis | 3 |
| DHM 724 | Animal Breeding and Reproduction | 3 |
| DHM 725 | Replacement Stock Management | 3 |
| ENL 711 | Communications | 3 |
| | | 18 |

PROGRAM OBJECTIVES

The objective of this program is to train students in the skills needed to successfully manage and operate a dairy farm. The program emphasizes the practical aspects of dairy farm operation.

A graduate of Dairy Herd Management should be able to:

1. analyze and work with soils — check soil conditions, select and apply the correct fertilizer, cultivate soil, calculate fertilizer formulas — and plan crops for dairy forage production.
2. understand financial institutions and programs as they relate to agriculture and apply the necessary financial principles.
3. develop dairy herd feeding programs which meet nutritional requirements for milk production, herd reproduction, maintenance and growth — based on knowledge of forage analysis, feed handling, and feed storage facilities.
4. apply health standards and sanitary milking procedures — with an emphasis on preventing herd health problems — and maintain milking equipment and facilities.
5. design a breeding and reproduction program using knowledge of sire selection, physiology related to reproduction and artificial insemination.
6. demonstrate skills in keeping farm accounts and interpret records related to the economic aspects of dairy production.
7. identify health problems of the herd which require treatment or diagnosis in order to maintain a healthy, productive herd.
8. demonstrate knowledge of the management techniques needed for success in the dairy industry.
9. demonstrate a strong work ethic.

## DENTAL HYGIENE (DH)

**Associate Degree/2 years**

This program offers the theoretical and clinical training needed for a variety of dental hygiene careers. The program provides a diversified background — to prepare students for licensing exams, for additional education, for jobs. Students must earn a minimum grade of "C" in each aspect of their dental hygiene courses. Failure to do so will result in termination from the program. See page 5 for special admission requirements for this program.

**Types of Jobs:** Hygienists are employed by dentists in private dental practices, research, government health agencies, school systems, hospital and industrial clinics, military services and in dental hygiene education programs.

**Required High School Courses:** Because of the strong emphasis on science in the dental hygiene program, applicants must have successfully completed one year of high school biology and two years of high school algebra. It is also recommended that the applicant have an additional laboratory science (i.e., physics, chemistry).

FIRST SEMESTER

| | | | Credits |
|---|---|---|---|
| DHG | 100 | Introduction to Dental Hygiene | 4 |
| DHG | 115 | Oral Anatomy & Histology | 3 |
| BIO | 115 | Human Anatomy & Physiology I | 4 |
| CHM | 107 | General Organic Chemistry | 3 |
| ENL | 111 | English Composition I | 3 |
| PED | | Physical Education | 1 |
| | | | 18 |

SECOND SEMESTER

| | | | Credits |
|---|---|---|---|
| DHG | 121 | Dental Materials | 2 |
| DHG | 123 | Periodontics I | 1 |
| DHG | 124 | Clinical Dental Hygiene I | 4 |
| DHG | 126 | Dental Radiology | 3 |
| BIO | 125 | Human Anatomy & Physiology II | 4 |
| BIO | 201 | Microbiology | 4 |
| | | | 18 |

THIRD SEMESTER

| | | | Credits |
|---|---|---|---|
| DHG | 230 | Clinical Dental Hygiene II | 5 |
| DHG | 236 | Periodontics II | 1 |
| DHG | 239 | General & Oral Pathology | 2 |
| DHG | 243 | Dental Specialties | 3 |
| DHG | 245 | Pharmacology | 2 |
| FHD | 112 | Nutrition | 3 |
| | | | 16 |

FOURTH SEMESTER

| | | | Credits |
|---|---|---|---|
| DHG | 241 | Community Dental Health | 2 |
| DHG | 242 | Clinical Dental Hygiene III | 4 |
| DHG | 244 | Dental Practice Orientation | 2 |
| ENL | 202 | Fundamentals of Speech | 3 |
| PSY | 111 | General Psychology | 3 |
| PED | | Physical Education | 1 |
| | | Elective-Social Science | 3 |
| | | | 18 |

PROGRAM OBJECTIVES

The general objective of the Dental Hygiene program is to prepare students to successfully pass the National Dental Hygiene Board examinations, the Northeast Regional Boards, the required examinations for selected states, and to qualify for employment as dental hygienists.

The Dental Hygiene graduate should be able to:

1. apply knowledge of the design, uses, and sharpening methods of dental hygiene instruments.
2. identify anatomical landmarks of the head and neck and identify deviations from normal.
3. use correct anatomical terminology in classifying all permanent and primary teeth on the basis of morphological and histological characteristics and occlusion.
4. apply knowledge of microbiology in aseptic techniques while performing a complete and thorough prophylaxis.
5. demonstrate appropriate preventive oral health procedures.
6. develop, process, and evaluate all types of intra and extra oral radiographs.
7. apply knowledge of interpersonal and motivational skills and communication techniques learned in English, speech, psychology, and social sciences when working with patients, other members of the dental health team, and community groups.
8. operate all dental equipment safely, effectively, and efficiently.
9. demonstrate a commitment to professional organizations through attending meetings, seminars, and continuing education programs.
10. apply knowledge of dental hygiene skills in a variety of settings (e.g., private practice, specialty practice, public institutions, industry, public health, etc.).
11. administer first aid and emergency treatment.
12. explain properties, dosage, actions, and reactions of drugs used in dentistry.
13. apply the concepts of anatomy, physiology, and nutrition in relating dental health to total health.
14. record all vital signs accurately and maintain accurate health histories, patient records and forms; conform to legal guidelines related to these materials.
15. develop sound ethical, philosophical, and moral professional characteristics.
16. apply concepts of chemistry in analyzing dental materials and relate them to body processes.
17. demonstrate knowledge of a lifetime sport which will provide recreation and promote physical fitness.

## DIESEL MECHANICS (DM)

**Certificate/2 years**

This program covers the theories and practical skills of diesel mechanics. Students develop the skills needed to work with diesel-powered highway vehicles, industrial and marine engines and commercial powerplants. Some specialization — in fuel injection service, engine repair and rebuilding, power train, brakes, steering, and chassis work is available. Students may start this program in the fall, spring or summer semester. Students are required to enroll for at least one summer semester.

**Types of Jobs:** Heavy duty truck mechanic for truck dealership, independent garage, truck fleet, or contractor. Industrial engine mechanic in mining, quarrying, construction equipment, or marine waterways fleet. Also field service representative for diesel engine manufacturer or distributor.

FIRST SEMESTER

| | | Credits |
|---|---|---|
| DMC 713 | Introduction to Diesel Mechanics (8 weeks) | 7 |
| DMC 714 | Internal Combustion Engines (8 weeks) | 7 |
| MTH 710 | Technical Mathematics I | 3 |
| | | 17 |

SECOND SEMESTER

| | | Credits |
|---|---|---|
| DMC 723 | Four-Cycle Diesel Engines (8 weeks) | 7 |
| DMC 724 | Two-Cycle Diesel Engines (8 weeks) | 7 |
| ENL 711 | Communications | 3 |
| | | 17 |

THIRD SEMESTER

| | | Credits |
|---|---|---|
| DMC 833 | Fuel Injection Systems I (8 weeks) | 7 |
| DMC 834 | Fuel Injection Systems II (8 weeks) | 7 |
| | Optional Elective | 0/3 |
| | | 14/17 |

FOURTH SEMESTER

| | | Credits |
|---|---|---|
| DMC 843 | Truck Tractor Power Train (8 weeks) | 7 |
| DMC 844 | Truck Tractor Chassis (8 weeks) | 7 |
| | Optional Elective | 0/3 |
| | | 14/17 |

Co-op Options:
Alternating
Parallel
Summer

### PROGRAM OBJECTIVES

The goal of this program is to prepare students for diesel mechanic careers in transportation, construction, marine, and related fields. The program also prepares students to take the Pennsylvania Vehicle Safety Inspection exam required for certification as a vehicle safety inspection mechanic.

A graduate of Diesel Mechanics should be able to:

1. diagnose and repair common malfunctions of systems and components on popular makes of diesel engines.

2. demonstrate correct service of:
   a. diesel engines
   b. truck transmission and drive trains
   c. fuel systems, and other engine accessories
3. perform state inspections.
4. diagnose equipment failure, isolate faulty systems or components, and make necessary repairs.
5. interpret wiring diagrams, test and make repairs to starting, charging, lighting, and accessory systems on vehicles.
6. use basic math operations (addition, subtraction, multiplication, division) including decimals, fractions, and conversions in diesel mechanics work.
7. write clear, concise, and accurate abstracts and reports.
8. demonstrate safe work habits and describe their importance to the diesel industry and OSHA.
9. demonstrate a responsible attitude toward diesel service, the diesel manufacturing industry and the world of work.

## DIETETIC TECHNICIAN (DT)

**Associate Degree/2 years**

The Dietetic Technician program emphasizes food production, patient nutritional care and dietary administration in health care and other institutions. Classroom work and practical experience stress the normal and therapeutic needs of humans, food production, planning and sanitation, management skills and accounting. This program includes 450 hours of clinical experiences.

**Types of Jobs:** Middle managers in dietary departments of health care institutions. Responsibilities include supervision of production and tray service to patients. Assist dietitians in patient contact, nutritional status and care data, as well as employee supervision and training. May also be employed as school cafeteria directors or in commercial quantity food production.

**Recommended High School Courses:** One unit of high school biology or chemistry, and high school math.

FIRST SEMESTER

| | | | Credits |
|---|---|---|---|
| FHD | 111 | Introductory Foods | 3 |
| FHD | 112 | Nutrition | 3 |
| FHD | 113 | Field Experience in Management Systems I (2nd 8 weeks) | 1 |
| FHD | 114 | Introduction to Food Service Administration and Medical Care Organization | 2 |
| FHD | 115 | Purchasing, Storage & Sanitation | 3 |
| BIO | 110 | Applied Human Physiology | 3 |
| PED | | Physical Education | 1 |
| | | | 16 |

SECOND SEMESTER

| | | | Credits |
|---|---|---|---|
| FHD | 121 | Quantity Food Preparation | 3 |
| FHD | 122 | Diet Therapy with Dietetic Seminar | 3 |
| FHD | 123 | Field Experience in Management Systems II | 3 |
| FHD | 125 | Menu Planning and Cost Control | 3 |
| ENL | 111 | English Composition I | 3 |
| PSY | | Elective-Psychology | 3 |
| | | | 18 |

SUMMER TERM

| | | | Credits |
|---|---|---|---|
| FHD | 250 | Hospitality, Dietetic Work Experience (Management Systems III) | 1 |

THIRD SEMESTER

| | | | Credits |
|---|---|---|---|
| FHD | 231 | Field Experience in Management Systems IV | 3 |
| FHD | 235 | Personnel Management, Work Simplification | 3 |
| FHD | 245 | Equipment and Layouts | 3 |
| ACC | 112 | Accounting I | 3 |
| PED | | Physical Education | 1 |
| | | Elective* | 3 |
| | | | 16 |

FOURTH SEMESTER

| | | | Credits |
|---|---|---|---|
| FHD | 234 | Health Care Delivery Systems | 3 |
| FHD | 242 | Field Experience in Management Systems V | 3 |
| FHD | 246 | Hospitality Merchandising | |
| | | or | 3 |
| FHD | 241 | Beverage Management & Catering | |
| ENL | 121 | English Composition II | |
| | | or | 3 |
| ENL | 202 | Fundamentals of Speech | |
| SOC | 111 | Introduction to Sociology | 3 |
| | | | 15 |

*Suggested Electives:
MTR 101 Medical Terminology I
CSC 118 Fundamentals of Computer Science
CHM 105 General Organic Chemistry

Co-op:
Summer (required)

### PROGRAM OBJECTIVES

The general objective of the Dietetic Technician program is to prepare students for employment in medical care institutions in diet planning, kitchen supervision, and patient education. The program is designed to satisfy regulatory agency requirements for Dietetic Technicians. Graduates may also transfer to a baccalaureate degree program at a four-year college.

The Dietetic Technician graduate should be able to:

1. demonstrate proper techniques of food preparation and food handling sanitation.
2. plan, develop and manage work schedules, job descriptions, menu planning, purchasing, portion control, and patient tray and cafeteria service.
3. describe equipment available on the market, and plan its arrangement, operation, and maintenance for efficiency and safety.
4. demonstrate creativity and sound thinking in personnel evaluations and in solving management problems.
5. conform to professional standards in personal appearance and demonstrate appropriate attitudes.
6. describe the physiological effects of food in the human body.
7. demonstrate a responsible attitude toward the dietetic profession and the community.
8. demonstrate ability to communicate clearly, both verbally and in writing, with co-workers and patients.
9. understand financial and budgetary controls in health care institutions.
10. assist in dietary record keeping.
11. demonstrate knowledge of the responsibilities of a dietitian; identify areas in which he/she may be of help and areas in which he/she should ask for assistance.
12. apply knowledge of physical activities and sports in maintaining good health.

## ELECTRICAL OCCUPATIONS (EO)

**Certificate/2 years**

This program offers the skills and theoretical background needed for a variety of careers. Graduates may work as electricians in electrical construction or in electrical maintenance — where they would work with electrical machinery. They will also be qualified to develop the circuitry used to install and troubleshoot electrical and electronic machine controlled equipment and systems. The program emphasizes electrical and electronic basics and the development of skills through laboratory practice. Courses in math, science and the humanities improve students' employment prospects.

**Types of Jobs:** Industrial maintenance, electrical troubleshooter, power company employee, construction union apprentice, electrical tester or inspector; self-employment in residential and commercial wiring.

FIRST SEMESTER

| | | | Credits |
|---|---|---|---|
| ELC | 711 | Direct Current Fundamentals | 6 |
| ELC | 712 | Basic Wiring Lab | 3 |
| ELC | 715 | Motor Maintenance and Repair | 3 |
| ENL | 711 | Communications | 3 |
| MTH | 710 | Technical Mathematics I | 3 |
| | | | 18 |

SECOND SEMESTER

| | | | Credits |
|---|---|---|---|
| ELC | 721 | Basic Motor Control | 4 |
| ELC | 722 | Alternating Current Fundamentals | 6 |
| ELC | 726 | Residential Blueprints | 3 |
| ELT | 113 | Accident Prevention | 2 |
| MTH | 500 | Technical Mathematics II | 3 |
| | | | 18 |

THIRD SEMESTER

| | | | Credits |
|---|---|---|---|
| ELC | 832 | Advanced Motor Control | 3 |
| ELC | 833 | Basic Electrical Construction Lab | 3 |
| ELC | 834 | Basic Electronics for Industry | 6 |
| ELC | 835 | Commercial, Industrial Blueprints and Equipment | 2 |
| EDT | 102 | Engineering Drafting | 2 |
| | | Optional Elective | 0/3 |
| | | | 16/19 |

FOURTH SEMESTER

| | | | Credits |
|---|---|---|---|
| ELC | 845 | Advanced Electrical Construction | 3 |
| ELC | 847 | Programmable Control | 4 |
| ELC | 848 | Electrical Machinery Analysis | 4 |
| ELC | 849 | Industrial Control | 4 |
| PHS | 500 | Physics Survey | 3 |
| | | | 18 |

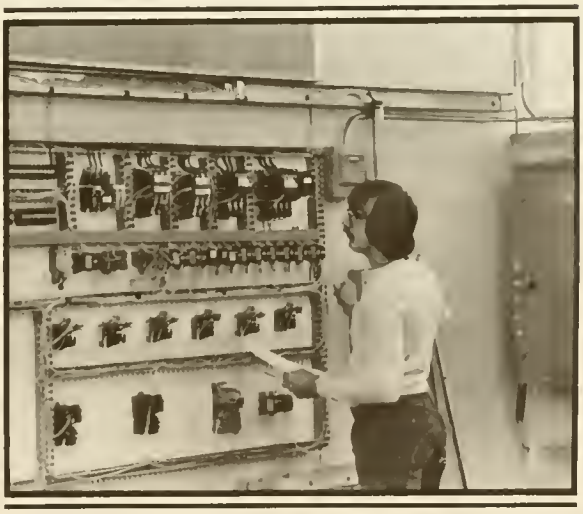
Co-op Options:
Parallel
Summer

PROGRAM OBJECTIVES

This program prepares graduates for jobs in residential, commercial or industrial electrical construction and maintenance.

A graduate of Electrical Occupations should be able to:

1. demonstrate technical skills in a variety of electrical fields, apply accepted safety standards and meet work quality standards.
2. demonstrate knowledge in electrical theory, mathematics and physics and apply this knowledge in the construction and operation of electrical systems.
3. use and care for electrical tools and materials and demonstrate the ability to requisition these items from a stockroom or supplier.
4. read and develop blueprints and use this information in performing installations which comply with the National Electrical Code.
5. interpret ideas and develop plans through communicating with others.
6. operate, maintain and repair rotating electrical machines.
7. demonstrate working knowledge of electrical construction procedures in residential, commercial, and industrial installations.
8. demonstrate the use of troubleshooting equipment and standard testing procedures.
9. set up ladder relay logic systems and convert them to electronic programmable control systems.
10. operate and maintain electrical and electronic programmable control systems.
11. demonstrate knowledge of basic electronic control circuitry, devices, and schematic diagrams.



## ELECTRICAL TECHNOLOGY (EL)

**Associate Degree/2 years**

This program prepares students for entry-level jobs in industry as electrical technicians. Students develop the practical skills needed to work with electrical machinery, electric and electronic machine control devices and other electronic equipment. The program emphasizes electrical and electronic basics and includes theory and lab experience in circuitry, industrial electronics, electrical machinery and electrical construction practices.

**Types of Jobs:** Electrical engineering technologist, electrical laboratory technician, industrial maintenance, electronic apparatus troubleshooter, field service technician.
**Recommended High School Subjects** Two years of algebra, one year of science. It is strongly recommended that any mathematics deficiencies be corrected prior to entering the program.
*GENERAL ELECTIVES are courses chosen from outside your program of concentration.

FIRST SEMESTER

| | | | Credits |
|---|---|---|---|
| ELT | 111 | Direct Current Fundamentals | 5 |
| ELT | 112 | Basic Wiring Lab | 3 |
| ELT | 113 | Accident Prevention | 2 |
| ENL | 111 | English Composition I | 3 |
| MTH | 103 | College Algebra & Trigonometry I | 3 |
| PED | | Physical Education | 1 |
| | | | 17 |

SECOND SEMESTER

| | | | Credits |
|---|---|---|---|
| ELT | 122 | Alternating Current Fundamentals | 5 |
| ELT | 124 | Electrical Blueprint Reading/ National Electrical Code | 4 |
| ELT | 125 | Basic Electrical Construction Lab | 3 |
| ENL | 121 | English Composition II | 3 |
| MTH | 104 | College Algebra & Trigonometry II | 3 |
| | | | 18 |

THIRD SEMESTER

| | | | Credits |
|---|---|---|---|
| ELT | 233 | Basic Electronics | 6 |
| ELT | 234 | Electrical Motor Control | 4 |
| PHS | 100 | Physics-Mechanics | 4 |
| PED | | Physical Education | 1 |
| | | Elective-General* | 3/4 |
| | | | 18/19 |

FOURTH SEMESTER

| | | | Credits |
|---|---|---|---|
| ELT | 241 | Electrical Systems Analysis | 2 |
| ELT | 244 | Advanced Electrical Theory | 3 |
| ELT | 245 | Introduction to Programmable Logic Control | 4 |
| ECO | 201 | Principles of Economics | 3 |
| PHS | 101 | Physics-Heat and Light | 4 |
| | | | 16 |

Co-op Options:
Parallel
Summer

PROGRAM OBJECTIVES

This program equips students with the skills needed to understand and apply electrical technology theory. The program includes practical skills and theoretical aspects of the trade. Graduates will also have the background needed to transfer to a four-year program.

Upon completion of the program, the graduate should be able to:

1. demonstrate technical skills in a variety of electrical fields, apply skills related to recent developments in the field and apply accepted safety standards.
2. demonstrate the ability to use algebra, trigonometry, and physics in the design, development, and analysis of electrical and electronic circuits and systems.
3. complete parts lists and order forms which demonstrate knowledge of catalogs and of the coding and numbering of components, devices, hardware, and materials.
4. interpret and develop blueprints, schematic diagrams, and wiring diagrams, and transform them into functioning systems that comply with the National Electrical Code and/or other specs.
5. evaluate electrical and electronic circuits and systems, and communicate the results of the evaluation verbally and/or in writing to others in or out of the field.
6. demonstrate basic knowledge of construction procedures and electrical wiring techniques.
7. demonstrate knowledge of test equipment, instrumentation, and electrical/electronic theory, including complex numbers and the network theorems used to analyze, troubleshoot, repair, and operate electrical/electronic circuits, systems, and equipment.
8. demonstrate knowledge of the theory and mechanics of rotating machinery, programmable logic control circuitry, transformer banks, and instrumentation.
9. demonstrate the ability to make effective decisions and understand the functions of competition and the need for personal growth.
10. describe United States business cycles, investments, and personnel policies and procedures and their relationship to the electrical industry.
11. recognize the need for physical fitness and lifelong recreational activities.

## ELECTRONICS TECHNOLOGY (ET)

**Associate Degree/2 years**

This program prepares students for technician level positions in a wide range of electronics based industries. Students learn to use "industry-standard" test equipment through practical laboratory work. The program gives students a broad theoretical and practical background in analog and digital electronic circuits and systems.

**Types of Jobs:** Electronics engineering technician, electronic lab technician, instrumentation technician, field service technician, technical writer.
**Recommended High School Subjects:** Two years of algebra, one year of science. We strongly recommend that any mathematics deficiencies be corrected prior to entering program.
*GENERAL ELECTIVES are courses chosen from outside your program of concentration:

FIRST SEMESTER

| | | | Credits |
|---|---|---|---|
| ENT | 111 | DC - AC Theory | 5 |
| ENT | 115 | Electronics Laboratory I | 3 |
| ENT | 116 | Introduction to Solid-State Devices | 3 |
| ENL | 111 | English Composition I | 3 |
| MTH | 103 | College Algebra & Trigonometry I | 3 |
| | | | 17 |

SECOND SEMESTER

| | | | Credits |
|---|---|---|---|
| ENT | 125 | Intermediate Solid State Devices and Circuits | 5 |
| ENT | 126 | Electronics Laboratory II | 3 |
| ENT | 127 | Introduction to Digital Electronics | 3 |
| ENL | 121 | English Composition II | |
| | | or | 3 |
| ENL | 201 | Technical Writing | |
| MTH | 104 | College Algebra & Trigonometry II | 3 |
| | | | 17 |

THIRD SEMESTER

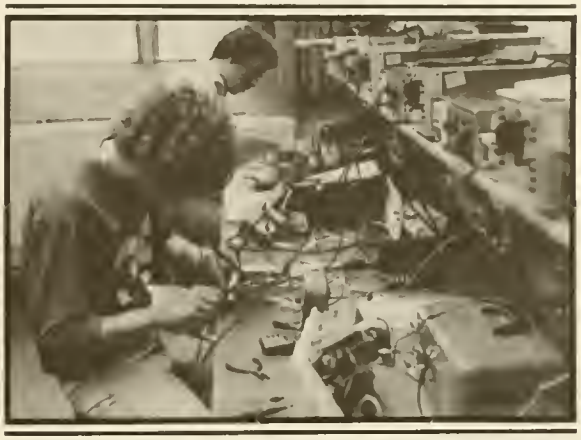
| | | | Credits |
|---|---|---|---|
| ENT | 233 | Communication Circuits and Systems | 5 |
| ENT | 237 | Electronics Laboratory III | 3 |
| ENT | 238 | Intermediate Digital Electronics | 3 |
| PED | | Physical Education | 1 |
| | | Elective - Math/Science | |
| | | or | 3/4 |
| | | Elective - Computer Science | |
| | | | 15/16 |

FOURTH SEMESTER

| | | | Credits |
|---|---|---|---|
| ENT | 246 | Introduction to Microprocessors | 5 |
| ENT | 247 | Electronics Laboratory IV | 3 |
| PED | | Physical Education | 1 |
| | | Elective - Electronics** | 3 |
| | | Elective - General* | 3/4 |
| | | | 15/16 |

**Electives - Electronics – Only one may be offered in any given year: ENT 248, Advanced Circuit Analysis, ENT 241, Calibration and Standardization.

Co-op Options:
Parallel
Summer



PROGRAM OBJECTIVES

The overall goal of the Electronics Technology program is to prepare students for electronic technician jobs in electronics and related industries.

A graduate should be able to:

1. apply working knowledge of AC and DC circuits.
2. demonstrate basic knowledge of solid state devices.
3. describe the theory of various electronic communication systems.
4. analyze circuits containing various types of electronic devices.
5. demonstrate basic knowledge of digital electronics, logic circuits, and microprocessors.
6. solve math problems related to circuit analysis, digital electronics and other systems.
7. communicate verbally and write technical reports.
8. operate laboratory type cathode ray oscilloscopes.
9. operate parameter measuring equipment and signal generating equipment.
10. program microprocessor based systems and interface peripheral devices.
11. establish good working relationships with co-workers and good social relationships.
12. apply knowledge of physical activities for the maintenance of good health.
13. describe contributions of our cultural heritage and demonstrate the qualities of good citizenship.

## ENGINEERING DRAFTING TECHNOLOGY (ED)

**Associate Degree/2 years**

This program trains students to make a variety of engineering drawings and calculations. It provides a broad knowledge of mechanical drafting and engineering procedures, and background skills in mathematics, science and communication.

**Types of Jobs:** Mechanical detail and layout drafting, engineering assistant or aide, checker, field department supervisor, or jobs in related areas such as planning, traffic safety, maintenance, and purchasing.
**Recommended High School Subjects:** Two years of algebra, one year of science.

FIRST SEMESTER

| | | | Credits |
|---|---|---|---|
| EDT | 108 | Manufacturing Processes | 3 |
| EDT | 111 | Basic Drafting I (8 weeks) | 4 |
| EDT | 112 | Basic Drafting II (8 weeks) | 4 |
| ENL | 111 | English Composition I | 3 |
| MTH | 103 | College Algebra & Trigonometry I | 3 |
| PED | | Physical Education | 1 |
| | | | 18 |

SECOND SEMESTER

| | | | Credits |
|---|---|---|---|
| EDT | 121 | Power Transmission (8 weeks) | 4 |
| EDT | 122 | Mechanisms (8 weeks) | 4 |
| ENL | 121 | English Composition II | 3 |
| MTH | 104 | College Algebra & Trigonometry II | 3 |
| PED | | Physical Education | 1 |
| | | | 15 |

THIRD SEMESTER

| | | | Credits |
|---|---|---|---|
| EDT | 231 | Detail & Assembly Drawings (8 weeks) | 4 |
| EDT | 232 | Applied Drafting Techniques (8 weeks) | 4 |
| PHS | 100 | Physics-Mechanics | 4 |
| | | Elective | 3/4 |
| | | | 15/16 |

FOURTH SEMESTER

| | | | Credits |
|---|---|---|---|
| EDT | 241 | Advanced Detail I (8 weeks) | 4 |
| EDT | 242 | Advanced Detail II (8 weeks) | 4 |
| PHS | 106 | Introduction to Metallurgy | 4 |
| | | Elective | 3/4 |
| | | | 15/16 |

Co-op Options:
Parallel
Summer

PROGRAM OBJECTIVES

The general objective of the program is to train students in the skills needed for a variety of entry-level jobs in engineering drafting.

A graduate of this program should be able to:

1. apply the basic elements of drafting.
2. analyze and design simple power transmission installations.
3. make detail and assembly drawings.
4. detail casting drawings from sketches and models.
5. redesign castings into weldment drawings.
6. draw the various methods of piping.
7. detail assembly and sub-assembly drawings from layouts.
8. describe and apply various methods of manufacturing related to engineering drafting.
9. describe and apply principles of physics and metallurgy to engineering drafting.
10. use the mathematical skills needed to solve applied problems in engineering drafting.
11. communicate effectively in small group and interpersonal situations that may occur in industry.
12. participate as an informed citizen in a democratic society based on values acquired through exposure to the humanities and social sciences.
13. develop fundamental skills in a lifetime sport.

## FLORICULTURE (FL)

**Associate Degree/2 years**

This program covers the business of growing, designing, and selling flowers, foliage plants and related materials. It prepares students for jobs involving planning, growing, designing, managing, and selling floral products and services.

**Types of Jobs:** Flower propagation; floral design; flower sales, both retail and wholesale; flower shop management; interior plantscaping; own business.

*GENERAL ELECTIVES are courses chosen from outside your program of concentration.

FIRST SEMESTER

| | | | Credits |
|---|---|---|---|
| OHT | 114 | Horticulture Soils | 3 |
| OHT | 115 | Woody Plants I | 2 |
| OHT | 116 | Herbaceous Plants | 3 |
| BIO | 111 | Basic Botany | 3 |
| ENL | 111 | English Composition I | 3 |
| MTH | 500 | Technical Mathematics II | 3 |
| | | | 17 |

SECOND SEMESTER

| | | | Credits |
|---|---|---|---|
| FLR | 121 | Greenhouse Crop Production I | 3 |
| FLR | 122 | Floral Design I | 3 |
| CHM | 100 | Fundamentals of Chemistry | |
| | | or | 4 |
| CHM | 105 | General Organic Chemistry | |
| ENL | 121 | English Composition II | 3 |
| PED | | Physical Education | 1 |
| | | | 14 |

THIRD SEMESTER

| | | | Credits |
|---|---|---|---|
| FLR | 232 | Greenhouse Crop Production II | 3 |
| FLR | 233 | Floral Design II | 3 |
| OHT | 234 | Plant Propagation | 3 |
| OHT | 239 | Plant Insects and Diseases | 3 |
| PED | | Physical Education | 1 |
| | | Elective-General* | 3/4 |
| | | | 16/17 |

FOURTH SEMESTER

| | | | Credits |
|---|---|---|---|
| FLR | 243 | Greenhouse Crop Production III | 3 |
| FLR | 244 | Flower Shop Operation | 3 |
| FLR | 245 | House & Conservatory Plants | 3 |
| OHT | 246 | Horticulture Mechanics | 3 |
| | | Elective-General* | 3/4 |
| | | | 15/16 |

Co-op Options:
Parallel
Summer

PROGRAM OBJECTIVES

The goal of the Floriculture program is to prepare students for employment or self-employment in the retail florist and greenhouse industry or related businesses.

A graduate of Floriculture should be able to:

1. relate basic knowledge of botany, chemistry, and horticulture soils to plant growth and culture.
2. identify the skills needed to organize thoughts and ideas and demonstrate the ability to communicate, verbally and in writing, in a manner that can be easily understood.
3. solve math problems related to the use of soil amendments, fertilizers, and plant growth control chemicals, and apply effective cost estimating, pricing, and record keeping techniques.
4. identify common trees and shrubs, ground covers, various annuals, biennials, and perennials by botanical and common names and describe the outstanding characteristics of each; summarize landscape, garden center, and greenhouse uses and cultural requirements of these plants.
5. select the proper procedures, define the physiological basis, and describe practical applications of the reproduction of plants by asexual and sexual methods.
6. describe proper design and operation of greenhouse environmental systems, and evaluate their advantages and disadvantages in commercial production.
7. summarize and assess plant growth requirements for commercial production of greenhouse crops, and economically produce a crop from seed or cutting to harvest and sales.
8. prepare salable floral designs of fresh, dried, and silk flowers using design guidelines, working within the time and cost requirements of the retail florist industry.
9. outline the management requirements of a flower shop — including record keeping and employee/employer relations — and demonstrate skills in designing and selling the types of arrangements and accessories used for special occasions.
10. identify and describe the effect of insects, disease, and physiological problems on plants, develop plans to control these problems, and obtain the Pennsylvania Private Applicator's License.
11. demonstrate knowledge of the operation and repair of equipment and mechanical systems used in the floriculture industry.
12. demonstrate a responsible attitude in relationships with employers, fellow employees, and toward the world of work.
13. identify foliage plants commonly used indoors by botanical and common names, state distinguishing characteristics of each, and describe their use and culture in various indoor landscape areas.
14. demonstrate an appreciation of physical fitness and lifelong recreational activities.

## FOOD & HOSPITALITY MANAGEMENT (FH)

**Associate Degree/2 years**

This program includes academic classroom study and practical laboratory work in business and personnel management, food preparation and supervision, and related subjects. Guest speakers, field trips, and directed community field work experiences expand students' learning experiences.

**Types of Jobs:** Food service supervisory positions in restaurants, clubs, hospitals, nursing homes, child care centers, schools, and colleges; front office or housekeeping manager in hotels and motels.
*GENERAL ELECTIVES are courses chosen from outside your program of concentration.

FIRST SEMESTER

| | | | Credits |
|---|---|---|---|
| FHD | 111 | Introductory Foods | 3 |
| FHD | 112 | Nutrition | 3 |
| FHD | 115 | Purchasing, Storage, and Sanitation | 3 |
| MGT | 247 | Small Business Management | 3 |
| ENL | 111 | English Composition I | 3 |
| PED | | Physical Education | 1 |
| | | | 16 |

SECOND SEMESTER

| | | | Credits |
|---|---|---|---|
| FHD | 121 | Quantity Food Preparation | 3 |
| FHD | 125 | Menu Planning and Cost Control | 3 |
| ENL | 121 | English Composition II | |
| | | or | 3 |
| ENL | 201 | Technical Writing | |
| PSY | 111 | General Psychology | 3 |
| PED | | Physical Education | 1 |
| | | Elective-General* | 3 |
| | | | 16 |

PRACTICUM—SUMMER TERM

| | | | Credits |
|---|---|---|---|
| FHD | 250 | Hospitality, Dietetic Work Experience (Management Systems III) | 1 |

THIRD SEMESTER

| | | | Credits |
|---|---|---|---|
| FHD | 235 | Personnel Management, Work Simplification | 3 |
| FHD | 236 | Hospitality Management and Theory | 2 |
| FHD | 245 | Equipment and Layouts | 3 |
| ACC | 112 | Accounting I | 3 |
| BIO | 110 | Human Physiology | |
| | | or | 3 |
| | | Elective-Science | |
| | | | 14 |

FOURTH SEMESTER

| | | | Credits |
|---|---|---|---|
| FHD | 126 | Front Office Management and Housekeeping** | 3 |
| FHD | 241 | Beverage Management and Catering | 3 |
| FHD | 246 | Hospitality Merchandising | 3 |
| MGT | 230 | Business Communication | 3 |
| | | Elective-General* | 3 |
| | | | 15 |

**Students may take FHD 122, Diet Therapy, or FHD 201, Advanced Quantity Foods, in place of FHD 126, Front Office Management and Housekeeping.

Co-op:
Summer (required)

PROGRAM OBJECTIVES

The general objective of the Food and Hospitality Management program is to prepare students for food service management jobs in restaurants, schools, institutions, and catering operations. Options within the program allow students to prepare for employment in front office and housekeeping positions in hotels and motels. Graduates may also transfer to a baccalaureate program at a four-year college.

Upon completion of the program, the student should be able to:

1. demonstrate proper techniques of food preparation and food handling sanitation.
2. plan, develop and manage work schedules, job descriptions, menu planning, purchasing, portion control, and dining room and cafeteria service.
3. describe the equipment available on the market and plan its arrangement, operation, and maintenance for efficiency and safety.
4. demonstrate creativity and sound thinking in solving management problems and in merchandising techniques.
5. conform to professional standards in personal appearance and demonstrate appropriate attitudes.
6. describe the physiological effects of food in the human body.
7. demonstrate a responsible attitude toward the dietetic profession and the community.
8. communicate clearly, both verbally and in writing.
9. demonstrate the ability to keep accurate food business records and understand the relationship between financial profits and good business ethics.
10. plan and cater events; apply knowledge of all types of beverages.
11. demonstrate working knowledge of the factors involved in establishing and operating a small business in the United States.
12. demonstrate working knowledge of front office practice and housekeeping procedures (students who select the lodging option).
13. apply knowledge of physical activities and sports in maintaining good health.

## FOREST TECHNOLOGY (FR)

**Associate Degree/2 years**

This program covers basic forestry techniques, activities and field work. It includes both academic and specialized forestry courses to prepare students for a variety of jobs in forestry.

**Types of Jobs:** In public agencies – Forest fire control; wildlife habitat improvement; maintenance of forest roads, structures, and recreation areas; timber estimation; timber marking; stand improvement.
In private employment – Pulpwood procurement; timber estimating; planning and construction of forest roads; supervision of logging operations; location and survey of forest property lines.
**Recommended High School Subjects:** Two years of algebra, one year of science.
*GENERAL ELECTIVES are courses chosen from outside your program of concentration.

FIRST SEMESTER

| | | | Credits |
|---|---|---|---|
| FOR | 111 | Dendrology | 3 |
| FOR | 113 | Forest Mensuration | 3 |
| FOR | 115 | Forest Botany | 3 |
| ENL | 111 | English Composition I | 3 |
| MTH | 103 | College Algebra & Trigonometry I | 3 |
| PED | | Physical Education | 1 |
| | | | 16 |

SECOND SEMESTER

| | | | Credits |
|---|---|---|---|
| FOR | 121 | Photogrammetry & Forest Surveying I | 3 |
| FOR | 124 | Advanced Forest Mensuration | 3 |
| FOR | 126 | Forest Ecology/Wildlife Management | 3 |
| ENL | 121 | English Composition II | 3 |
| MTH | 104 | College Algebra & Trigonometry II | 3 |
| PED | | Physical Education | 1 |
| | | | 16 |

THIRD SEMESTER

| | | | Credits |
|---|---|---|---|
| FOR | 232 | Forest Surveying II | 3 |
| FOR | 233 | Equipment and Machinery | 3 |
| FOR | 234 | Timber Harvesting | 3 |
| FOR | 236 | Silviculture | 3 |
| MGT | 110 | Principles of Business | 3 |
| | | | 15 |

FOURTH SEMESTER

| | | | Credits |
|---|---|---|---|
| FOR | 242 | Forest Products | 3 |
| FOR | 247 | Forest Land Management & Recreation | 3 |
| FOR | 248 | Forest Protection | 3 |
| ECO | 201 | Principles of Economics | 3 |
| | | Elective-General* | 3/4 |
| | | | 15/16 |

Co-op Options:
Parallel
Summer

PROGRAM OBJECTIVES

The general objective of the Forest Technology program is to prepare students for jobs as forest technicians in public and private sectors of forestry and in related fields.

The graduate of the Forest Technology program should be able to:

1. write clear, grammatically correct and accurate technical reports and demonstrate skills in verbal communication.
2. identify selected species of trees and shrubs by their scientific and common names, general uses, site characteristics and geographic distribution.
3. apply the fundamentals of plane surveying — including the use and care of surveying equipment, maps and map making, and the theory of measurements.
4. measure the volume of standing timber and the volume of products removed from the forest.
5. prepare a forest land management plan for a property using the concepts of multiple use and sustained yield forest management.
6. demonstrate knowledge of the silvicultural treatments used to regulate stand composition, regenerate stands, increase growth rates and improve timber quality.
7. apply the basic theories, principles, and techniques used in timber harvesting and demonstrate skills in the operation and maintenance of tools and equipment used to harvest a forest crop.
8. analyze the relationship between humans, other organisms, and the forest environment.
9. describe the life history, food requirements, and distribution of the major game and non-game birds and mammals of Pennsylvania.
10. identify and describe the function of tree parts and of selected plants and describe their relation to soil.
11. describe the processing operations related to various forest products and the properties and uses of these products; identify and describe the characteristics and structure of wood.
12. describe the characteristics and control of various forest pests, diseases, and fire problems.
13. use the appropriate math skills to solve applied problems in the field of forestry.
14. develop fundamental skills in lifetime sports.
15. demonstrate responsible attitudes needed for successful relationships with employers, fellow employees, and the world of work.

## GRAPHIC ARTS (GA)

**Associate Degree/2 years**

This program provides practical skills in the graphic arts together with management, marketing, and supervisory training. Laboratory and shop work on modern graphic arts equipment develops students' skills in typesetting, pasting up mechanicals, and in camera, press and bindery operations.

**Types of Jobs:** Graphic arts executive training, in-plant supervisors, self-employed printer, marketing and technical sales service.
**Recommended High School Subjects:** Two years of algebra, one year of science.

FIRST SEMESTER

| | | | Credits |
|---|---|---|---|
| GCO | 511 | Layout and Design | 4 |
| GCO | 512 | Typographic Composition | 4 |
| ENL | 111 | English Composition I | 3 |
| SEC | 509 | Typewriting | 1 |
| MTH | | Elective-Math* | 3 |
| PED | | Physical Education | 1 |
| | | | 16 |

SECOND SEMESTER

| | | | Credits |
|---|---|---|---|
| GCO | 521 | Process Camera | 4 |
| GCO | 522 | Film Assembly & Imposition | 4 |
| ENL | 121 | English Composition II | |
| | | or | 3 |
| ENL | 201 | Technical Writing | |
| MGT | 247 | Small Business Management | 3 |
| PED | | Physical Education | 1 |
| | | | 15 |

THIRD SEMESTER

| | | | Credits |
|---|---|---|---|
| GCO | 631 | Platemaking, Substrates & Finishing | 4 |
| GCO | 632 | Press Operations | 4 |
| GCO | 635 | Printing Estimating Practices | 3 |
| CHM | 299 | Chemistry of Lithography | 3 |
| | | Elective | 3 |
| | | | 17 |

FOURTH SEMESTER

| | | | Credits |
|---|---|---|---|
| GCO | 641 | Advanced Typographic Composition | 3 |
| GCO | 642 | Advanced Process Camera and Stripping | 3 |
| GCO | 645 | Printing Processes | 3 |
| CSC | 118 | Fundamentals of Computer Science | 3 |
| | | Elective | 3 |
| | | | 15 |

*MTH 101 Introduction to Mathematics I, MTH 102 Introduction to Mathematics II, MTH 103 College Algebra & Trigonometry I, MTH 104 College Algebra & Trigonometry II

Co-op Options:
Parallel
Summer

PROGRAM OBJECTIVES

The general objective of this program is to prepare students for employment in the graphic arts and printing industry. Related courses and electives improve students' advancement potential and prepare graduates for additional education leading to a baccalaureate degree.

A graduate of the Graphic Arts program should be able to:

1. recognize the major printing processes, their products, and the advantages of each process.
2. demonstrate the skills needed for entry level jobs (as advanced trainees) in the following areas: layout and design, copy preparation and typesetting, stripping (setting up camera negatives for printing), platemaking (transferring the copy to be printed onto a metal plate for use on a printing press), presswork and finishing operations (collating, binding, cutting, etc.).
3. use technical knowledge of the above processes to make effective job-related decisions.
4. evaluate his/her abilities and limitations in various areas of the graphic arts.
5. demonstrate good work habits: promptness, willingness to work, and the ability to accept supervision.
6. demonstrate knowledge of graphic arts equipment and use appropriate safety precautions when working around such equipment.
7. compare production departments (typesetting and layout, camera, press and bindery) and the contributions each makes to the printed product.
8. identify the problems of owning and operating a business.
9. describe basic chemistry principles and apply them to graphic arts.
10. solve basic mathematical problems related to graphic arts.
11. write clear, concise, legible, and accurate technical reports using standard English.
12. demonstrate skills in verbal communication and speak logically using various types of verbal communication techniques.
13. demonstrate knowledge of the rules and techniques of a lifetime sport which will provide recreation and promote physical fitness.

## INDUSTRIAL DRAFTING (ID)

**Certificate/2 years**

This program emphasizes the development of drafting skills to prepare students for entry-level jobs in industry. Students will also study related manufacturing processes to improve their understanding of the industrial process and the need for accuracy in drafting.

**Types of Jobs:** Mechanical, sheet metal, piping, civil, structural, architectural or electrical drafting; possible advancement opportunities include related jobs such as estimator or field erection supervisor.

FIRST SEMESTER

| | | | Credits |
|---|---|---|---|
| IND | 714 | Basic Drafting (8 weeks) | 5 |
| IND | 715 | Machine Drafting (8 weeks) | 5 |
| ENL | 711 | Communications | 3 |
| MTH | 710 | Technical Mathematics I | 3 |
| | | | 16 |

SECOND SEMESTER

| | | | Credits |
|---|---|---|---|
| IND | 724 | Gears, Cams, Mechanisms (8 weeks) | 5 |
| IND | 725 | Sheet Metal and Piping (8 weeks) | 5 |
| EDT | 108 | Manufacturing Processes | 3 |
| MTH | 500 | Technical Mathematics II | 3 |
| | | | 16 |

THIRD SEMESTER

| | | | Credits |
|---|---|---|---|
| IND | 834 | Civil Drafting (8 weeks) | 5 |
| IND | 835 | Structural Drafting (8 weeks) | 5 |
| PHS | 500 | Physics Survey | 3 |
| | | Elective | 3 |
| | | | 16 |

FOURTH SEMESTER

| | | | Credits |
|---|---|---|---|
| IND | 844 | Architectural Drafting (8 weeks) | 5 |
| IND | 845 | Electrical and Electronic Drafting (8 weeks) | 5 |
| | | Elective | 3 |
| | | | 13 |

Co-op Options:
Parallel
Summer

PROGRAM OBJECTIVES

The general objective of this program is to prepare students for drafting jobs in industry. Students develop skills in a variety of drafting techniques and take basic academic courses to prepare them for entry-level jobs and for advancement in their field.

A graduate from this program should be able to:

1. draw designs and details using drawing instruments.
2. draft detailed working drawings of machinery and mechanical devices.
3. indicate dimensions and tolerances, fasteners and joining requirements.
4. draw multiple-view assembly drawings required for the manufacture and repair of mechanisms.
   a. make detail drawings of gears and cams.
   b. select power transmission parts from manufacturer's catalogs.
5. draw plans and details for structures using structural reinforcing steel, concrete, masonry, and other structural materials.
6. prepare plans and details of foundations, building frames, floor and roof framing and other structural elements.
7. draw electrical equipment, working drawings and wiring diagrams used by construction crews and repairpersons who install electrical equipment and wiring in power plants, communications centers, industrial establishments, stores, homes, and electrical distribution centers.
8. draw architectural and structural features of buildings and other structures.
9. calculate quality, quantity, strength, and total cost of materials; assure that the planned structure will meet building codes.
10. prepare complete, accurate scale drawings of sheet metal parts and equipment used in the construction and repair of material conveyance equipment.
11. draw piping plans and elevations with ability to estimate and draw "takeoffs" from setting plans of boilers and processing plants.
12. use civil engineer's field notes showing metes and bounds, cross sections, and cuts and fills to prepare drawings.
13. apply engineering data to drawings using mathematical calculations and basic laws of physics.
14. write accurate technical reports using standard English.
15. demonstrate a responsible attitude toward mechanical drafting and a cooperative spirit toward each person associated with this work.

## JOURNALISM (JO)

**Associate Degree/2 years**

Practical courses in news and feature story writing, news photography, editing, copy writing, and community responsibility prepare students for a variety of jobs in journalism and related fields. Background courses in government, economics, sociology, and psychology broaden students' perspectives and prepare them for the possibility of advanced study.

**Types of Jobs:** Newspaper reporter, advertising copywriter, public relations assistant, news photographer, magazine research assistant.
*GENERAL ELECTIVES are courses chosen from outside your program of concentration.

FIRST SEMESTER

| | | | Credits |
|---|---|---|---|
| JOU | 111 | News Writing | 3 |
| JOU | 113 | Principles of News Photography | 3 |
| ENL | 111 | English Composition I | 3 |
| GOV | 231 | American Government - National | 3 |
| SEC | 111 | Typewriting I | 3 |
| PED | | Physical Education | 1 |
| | | | 16 |

SECOND SEMESTER

| | | | Credits |
|---|---|---|---|
| JOU | 121 | Reporting Public Affairs | 3 |
| JOU | 122 | Introductory Newspaper Production | 2 |
| ENL | 202 | Fundamentals of Speech | 3 |
| GOV | 241 | State and Local Government | 3 |
| SOC | 111 | Introduction to Sociology | 3 |
| PED | | Physical Education | 1 |
| | | | 15 |

THIRD SEMESTER

| | | | Credits |
|---|---|---|---|
| JOU | 231 | Feature Writing | 3 |
| JOU | 232 | Copyreading and Editing | 3 |
| JOU | 233 | Newspaper Management and Production | 2 |
| ECO | 201 | Principles of Economics | 3 |
| | | Elective-General* | 3/4 |
| | | | 14/15 |

FOURTH SEMESTER

| | | | Credits |
|---|---|---|---|
| JOU | 241 | Newspaper Organization and Community Responsibility | 3 |
| JOU | 242 | Internship | 2 |
| ADV | 101 | Principles of Advertising | 3 |
| ESC | 100 | Environmental Science | 3 |
| PSY | 111 | General Psychology | 3 |
| | | Elective-General* | 3/4 |
| | | | 17/18 |

Co-op Options:
Parallel
Summer

PROGRAM OBJECTIVES

The general objective of the Journalism program is to prepare students for employment in the journalism field (in a small or middle-size operation), for other business positions requiring communication skills and for advanced study.

Graduates of the Journalism program will be able to:

1. state their importance as citizens, in the broad sense, in a community and their unique importance as trained media persons who can often influence the lives of others in the community.
2. explain the responsibilities of the media in America and the responsibilities that journalists with specialized media training have in their community.
3. use modern mass media copy production systems, such as the computerized video display terminals.
4. state the ethical principles and the laws which govern the production of mass media and explain the individual's personal responsibility in adhering to those laws.
5. state the philosophical and practical standards and goals of various forms of mass media.
6. list interrelationships between mass media and the various kinds of communities, i.e., geographical, corporate, etc.
7. interview, research, and put together material necessary for writing feature and/or in-depth articles for publication.
8. produce public relations material including articles and basic photographic work.
9. state relationship between photographs and news, advertising and public relations material and demonstrate ability to complete basic photographic assignments.
10. list differences in types of writing for various forms of mass media: newspapers, magazines, trade journals, house organs, etc.
11. describe the roles of individuals on publication staffs.
12. explain the relationship between publications and publication budgets as they pertain to a business operation.
13. explain the differences between objective, non-objective, biased, persuasive, and other forms of writing for mass media.
14. coordinate, organize and produce club bulletins, house organs and similar small publications.
15. assist in the production of advertising copy and layouts for small publications or for a small advertising agency.
16. demonstrate knowledge of a lifetime sport which will provide recreation and promote physical fitness.

## MACHINE TOOL TECHNOLOGY (TT)

**Associate Degree/2 years**

This program prepares students to work with engineers and shop superintendents. Students develop skills in machine operation and theory, blueprint reading and mechanical drawing in the program's labs and shops. Training in job routing and the order in which operations are performed is included. Related courses in mathematics, science and physics improve students' advancement potential.

**Types of Jobs:** Toolmaker; experimental, numerical controller; production technician; administrative assistant.
**Recommended High School Subjects:** Two years of algebra, one year of science.

FIRST SEMESTER

| | | | Credits |
|---|---|---|---|
| MTT | 511 | Machining I (8 weeks) | 5 |
| MTT | 512 | Machining II (8 weeks) | 5 |
| ENL | 111 | English Composition I | 3 |
| MTH | 103 | College Algebra & Trigonometry I | 3 |
| PED | | Physical Education | 1 |
| | | | 17 |

SECOND SEMESTER

| | | | Credits |
|---|---|---|---|
| MTT | 521 | Automatic Machines (8 weeks) | 5 |
| MTT | 522 | Industrial Metrology (8 weeks) | 5 |
| ENL | 121 | English Composition II | 3 |
| MTH | 104 | College Algebra & Trigonometry II | 3 |
| | | | 16 |

THIRD SEMESTER

| | | | Credits |
|---|---|---|---|
| MTT | 631 | Tooling Technology I (8 weeks) | 5 |
| MTT | 632 | Tooling Technology II (8 weeks) | 5 |
| PHS | 100 | Physics-Mechanics | 4 |
| EDT | 101 | Mechanical Drawing | 2 |
| | | | 16 |

FOURTH SEMESTER

| | | | Credits |
|---|---|---|---|
| MTT | 641 | Abrasive Machining (8 weeks) | 5 |
| MTT | 642 | Heat Treatment and Cutter Grinding (8 weeks) | 5 |
| PHS | 106 | Introduction to Metallurgy | 4 |
| PED | | Physical Education | 1 |
| | | | 15 |

Co-op Options:
Alternating
Parallel
Summer

PROGRAM OBJECTIVES

The overall objective is to prepare students for jobs in the machine tool industry.

A graduate of the Machine Tool Technology program should be able to:

1. demonstrate safe work habits and be conscious of safety when working with machinery.
2. read blueprints, interpret drawings, understand specifications, and establish tolerances.
3. apply mathematics in the machine tool trade (speeds, feeds, thread measurement, sinebar, etc.).
4. apply the principles of physics and metallurgy to the science of heat treatment operations including:
   a. hardening of steel
   b. carburizing
   c. case hardening
   d. tempering
   e. annealing
5. operate basic machine tools and demonstrate knowledge of their construction in relation to the metal industry.
6. describe the construction and operation of production machinery, including turret lathes, screw machines, automatic tappers, etc.
7. demonstrate skills on numerical control machine, electrical discharge machine, electrical chemical grinder, digital readout, diemaking, jig grinding, jigs and fixtures.
8. operate abrasive cutting machinery and select and plan machining operations on this equipment.
9. demonstrate skills in quality control, inspection, gaging methods, and production control as they relate to manufacturing design and production.
10. demonstrate basic verbal communication skills, speak logically, and use various types of verbal and written communication techniques to promote good business relationships, to develop leadership, and to establish good employer-employee-customer relationships.
11. demonstrate knowledge of a lifetime sport which will provide recreation and promote physical fitness.

## MACHINIST GENERAL (MG)

**Certificate/2 years**

This program offers training on machine tools commonly used in most shops. It emphasizes practical machine skills. Classroom analysis of various jobs and machine operations increases the student's capabilities as a machinist. General mathematics, science, and communications skills are included to prepare students to work with technical advances in the machining industry.

**Types of Jobs:** Machinist, machine repair mechanic, setup person for production line work, skilled toolroom mechanic, technical sales, manufacturing supervision, or machine shop ownership.

FIRST SEMESTER

| | | | Credits |
|---|---|---|---|
| MTT | 511 | Machining I (8 weeks) | 5 |
| MTT | 512 | Machining II (8 weeks) | 5 |
| MTH | 710 | Technical Mathematics I | 3 |
| | | | 13 |

SECOND SEMESTER

| | | | Credits |
|---|---|---|---|
| MTT | 521 | Automatic Machines (8 weeks) | 5 |
| MTT | 522 | Industrial Metrology (8 weeks) | 5 |
| MTH | 500 | Technical Mathematics II | 3 |
| | | Elective | 3 |
| | | | 16 |

THIRD SEMESTER

| | | | Credits |
|---|---|---|---|
| MTT | 631 | Tooling Technology I (8 weeks) | 5 |
| MTT | 632 | Tooling Technology II (8 weeks) | 5 |
| PHS | 500 | Physics Survey | 3 |
| ENL | 711 | Communications | 3 |
| | | | 16 |

FOURTH SEMESTER

| | | | Credits |
|---|---|---|---|
| MTT | 641 | Abrasive Machining (8 weeks) | 5 |
| MTT | 642 | Heat Treatment and Cutter Grinding (8 weeks) | 5 |
| EDT | 101 | Mechanical Drawing | 2 |
| | | Elective or Approved Co-op | 3 |
| | | | 15 |

Co-op Options:
Alternating
Parallel
Summer

PROGRAM OBJECTIVES

The overall objective of this program is to prepare students for jobs in the machining industry.

A graduate of the Machinist General program should be able to:

1. demonstrate safe work habits and be conscious of safety when operating machine tools and equipment.
2. demonstrate working knowledge of blueprint reading; work from sketches of parts.
3. develop and use mathematical formulas to compute coordinates and solve gearing and threading problems.
4. apply basic knowledge of physics-mechanics to machine tool problems such as power transmission, machining, etc.
5. operate and set up basic machine tools.
6. operate machine tools to produce gears, threads, and gages.
7. operate and set up numerically controlled machines, electrical discharge, and electrical chemical machines.
8. operate various types of abrasive cutting machines and practice heat treating of metals, for example, hardening, annealing, and carburizing.
9. prepare and revise technical papers used in operating machine tools and machining procedure.

## NURSERY MANAGEMENT (NM)

**Associate Degree/2 years**

The Nursery Management program emphasizes the identification of commercially important plants and the design, construction and maintenance of landscape plans and features. The program prepares students to propagate, grow to a commercial size and profitably sell the many species and varieties of woody plants. Garden center operation is also emphasized.

**Types of Jobs:** Propagation and production of trees and shrubs in field or container nurseries; nursery stock buyer; agent or salesperson; retail (garden center) sales; horticulturist with a government agency (city, state, federal), landscaping, or your own business.
*GENERAL ELECTIVES are courses chosen from outside your program of concentration.

FIRST SEMESTER

| | | | Credits |
|---|---|---|---|
| OHT | 114 | Horticulture Soils | 3 |
| OHT | 115 | Woody Plants I | 2 |
| OHT | 116 | Herbaceous Plants | 3 |
| BIO | 111 | Basic Botany | 3 |
| ENL | 111 | English Composition I | 3 |
| MTH | 500 | Technical Mathematics II | 3 |
| | | | 17 |

SECOND SEMESTER

| | | | Credits |
|---|---|---|---|
| NMG | 121 | Nursery Production I | 3 |
| NMG | 126 | Woody Plants II | 3 |
| CHM | 100 | Fundamentals of Chemistry | |
| | | or | 4 |
| CHM | 105 | General Organic Chemistry | |
| ENL | 121 | English Composition II | 3 |
| PED | | Physical Education | 1 |
| | | | 14 |

THIRD SEMESTER

| | | | Credits |
|---|---|---|---|
| NMG | 232 | Nursery Production II | 3 |
| NMG | 237 | Woody Plants III | 3 |
| OHT | 234 | Plant Propagation | 3 |
| OHT | 239 | Plant Insects and Diseases | 3 |
| PED | | Physical Education | 1 |
| | | Elective-General* | 3/4 |
| | | | 16/17 |

FOURTH SEMESTER

| | | | Credits |
|---|---|---|---|
| NMG | 245 | Landscape Construction | 3 |
| NMG | 248 | Landscape Maintenance | 3 |
| NMG | 249 | Landscape Design | 3 |
| OHT | 246 | Horticulture Mechanics | 3 |
| | | Elective-General* | 3/4 |
| | | | 15/16 |

Co-op Options:
Parallel
Summer

PROGRAM OBJECTIVES

The goal of Nursery Management is to prepare students for employment or self-employment in such jobs as growing nursery crops, retail and garden center sales, and landscape work.

A graduate of Nursery Management should be able to:

1. apply basic knowledge of botany, chemistry, and horticulture soils to plant growth and culture.
2. identify the skills needed to organize thoughts and ideas and communicate, verbally and in writing, in a manner that can be easily understood.
3. solve math problems related to the use of soil amendments, fertilizers, and plant growth control chemicals, and apply cost estimating, pricing, and record keeping techniques.
4. identify deciduous trees and shrubs, narrow and broad-leaved evergreens, cultivars, and varieties by botanical and common name and point out their distinguishing characteristics, landscape uses and applications.
5. identify various annuals, biennials, and perennial herbaceous plants, and summarize landscape, garden center, and greenhouse use and the growth requirements of these plants.
6. describe the various types of nurseries, nursery growing structures, related facilities, equipment, and handtools and define the proper location for and the design factors of nursery facilities.
7. demonstrate the ability to grow commercial plants in field and container operations on a scheduled production basis.
8. identify and describe the effect of insects, diseases, and physiological problems on plants, plan for proper control of these problems, and obtain the Pennsylvania Private Applicator's License.
9. select the proper procedures, define the physiological basis, and describe practical applications of the reproduction of plants by sexual and asexual methods.
10. explain the proper and effective use of woody and herbaceous plant materials in developing public and domestic landscape areas.
11. create landscape features such as waterfalls, pools, steps, walks, walls, and patios using materials like flagstone, brick, railroad ties and mountain stone.
12. identify turfgrass varieties and uses, and demonstrate an understanding of the establishment and maintenance of turf areas.
13. apply skills in pruning, fertilizing, and spraying in maintaining existing landscapes, fruit trees and other fruit-bearing plants.
14. demonstrate knowledge of the operation and repair of equipment and mechanical systems used in the nursery industry.
15. demonstrate a responsible attitude in relationships with employers, fellow employees, and the world of work.
16. demonstrate an appreciation of physical fitness and lifelong recreational activities.

## PLUMBING & HEATING (PL)
**Certificate/2 years**

This program includes the basic theories of plumbing and heating, soil waste and vent layout, household and industrial maintenance, sewage systems, and the use of hand and power tools. Students develop skills in all types of plumbing and heating repair work used in residential, institutional, and commercial applications. The program also provides training in the fundamentals of communication and mathematics.

**Types of Jobs:** Plumbing and heating installation, industrial maintenance, public utilities service, machine work and shipbuilding industries.

FIRST SEMESTER

| | | | Credits |
|---|---|---|---|
| PLH | 711 | Basic Plumbing (First B weeks) | 6 |
| PLH | 712 | Advanced Plumbing Skills (Second 8 weeks) | 6 |
| MTH | 710 | Technical Mathematics I | 3 |
| | | | 15 |

SECOND SEMESTER

| | | | Credits |
|---|---|---|---|
| PLH | 721 | Plumbing Systems and Blueprints (First 8 weeks) | 6 |
| PLH | 722 | Advanced Systems and Codes (Second 8 weeks) | 6 |
| WEL | 703 | Electric Welding | 2 |
| ENL | 711 | Communications | 3 |
| | | | 17 |

THIRD SEMESTER

| | | | Credits |
|---|---|---|---|
| PLH | 833 | Heat Loss Calculations - Pipe Welding (First 8 weeks) | 7 |
| PLH | 832 | Hot Water Heat - Heat Conservation (Second 8 weeks) | 6 |
| ELT | 110 | Electricity for the Trades | 3 |
| | | Optional Elective | 0/3 |
| | | | 16/19 |

FOURTH SEMESTER

| | | | Credits |
|---|---|---|---|
| PLH | 841 | Steam Heat and Pipefitting (First 8 weeks) | 6 |
| PLH | 842 | Field Work and Advanced Skills (Second 8 weeks) | 6 |
| | | Optional Elective | 0/3 |
| | | | 12/15 |

Co-op Options:
Alternating
Parallel
Summer

PROGRAM OBJECTIVES

The goal of the Plumbing and Heating program is to prepare students for entry-level jobs in plumbing and heating.

A graduate of the Plumbing and Heating program should be able to:

1. demonstrate good work habits and meet accepted safety standards.
2. use hand and power tools of the trade.
3. identify piping materials and install them using proper connections.
4. use and apply trade terms and technical data.
5. read and interpret blueprints, specifications, and codes as they apply to the trade.
6. lay out, estimate, calculate, and use mathematical skills required in the trade.
7. install, maintain, and repair plumbing and heating mechanical systems and equipment and keep up with new developments in the field.
8. demonstrate the ability to write letters of application, memos, work orders, and reports, and apply communication skills on the job.
9. demonstrate welding skills required in plumbing and heating.
10. apply basic knowledge and skills of electrical work to install, repair, maintain, and troubleshoot electrical controls used in plumbing and heating.
11. identify the principles involved in the collection, storage and use of solar energy for space and domestic water heating.
12. apply energy conservation measures to plumbing and heating installations.

## PRACTICAL NURSING (NU)

**Certificate/52 weeks**

Classroom instruction in theory and basic skills is offered at the College's central campus in Williamsport and at our North Campus in Wellsboro. Students enrolling at the Williamsport campus gain practical experience in patient care at The Williamsport Hospital, Divine Providence Hospital and at the Lysock View Home and Hospital. Wellsboro students acquire experience at Soldiers and Sailors Memorial Hospital and the Green Home.

Under the guidance of college faculty, students gain experience in the care of adult patients and in maternal and child health nursing at the cooperating hospitals and homes. The program includes instruction in mental health concepts, pharmacology and diet therapy. See page 5 for special admission requirements for this program.

**Types of Jobs:** Employment in hospitals, convalescent homes, visiting nurses association, doctor's office, private duty.

FIRST SEMESTER-16 Weeks of 33 Hours Each

| | | Credits |
|---|---|---|
| NUR 710 | Foundations of Nursing | 12 |
| NUR 711 | Nursing Relationships | 3 |
| NUR 712 | Scientific Principles Relating to Nursing | 6 |
| | | 21 |

SECOND SEMESTER-15 Weeks of 30 Hours Each

| | | Credits |
|---|---|---|
| NUR 723 | Medical-Surgical Nursing—Elementary* | 9 |
| NUR 724 | Parental and Child Health** | 9 |
| | | 18 |

THIRD SEMESTER-15 Weeks of 30 Hours Each

| | | Credits |
|---|---|---|
| NUR 735 | Medical-Surgical Nursing—Intermediate | 18 |
| | | 18 |

PRACTICUM-3 Weeks of 25 Hours Each

| | | |
|---|---|---|
| NUR 736 | Practicum | 2 |
| | | 2 |

Theory—600 Hours 2/5 Ratio
Practicum—903 Hours 3/5 Ratio
Total—1,503 Hours

VACATION-3 Weeks

*NUR 723-15 wks lecture/7 wks lab
**NUR 724-15 wks lecture/8 wks lab

PROGRAM OBJECTIVES

A graduate of the Practical Nursing program will be able to share in the care of the sick, in rehabilitation therapy and in the prevention of illness — always under the direction of a licensed physician and/or registered professional nurse. The fundamental objective of the program is to prepare students to meet practical nursing licensing requirements.

At the completion of the Practical Nursing program, the graduate should be able to:

1. use — under supervision — scientific knowledge and skills needed to plan and provide safe and comprehensive client-centered nursing care of the subacutely and chronically ill of all ages.
2. administer nursing care that reflects accurate assessments of the client's growth and development.
3. use problem-solving approaches in administering nursing care.
4. use effective communication skills.
5. assist the professional and technical nurse in the care of the acutely ill client.
6. demonstrate knowledge of the role of community health agencies in meeting health needs of society.
7. adhere to an acceptable code of ethical behavior based on standards set by health care delivery agencies.

## PRINTING (GP)
**Certificate/2 years**

This program provides practical skills training in all printing operations. Students learn to set type, to paste up type, to operate cameras and printing presses. Finishing operations — collating, binding and cutting — are also covered.

**Types of Jobs:** Camera work, stripper, layout work, compositor, platemaker, and press work.

FIRST SEMESTER

| | | | Credits |
|---|---|---|---|
| GCO | 511 | Layout and Design | 4 |
| GCO | 512 | Typographic Composition | 4 |
| ENL | 711 | Communications | 3 |
| MTH | 710 | Technical Mathematics I | 3 |
| SEC | 509 | Typewriting | 1 |
| | | | 15 |

SECOND SEMESTER

| | | | Credits |
|---|---|---|---|
| GCO | 521 | Process Camera | 4 |
| GCO | 522 | Film Assembly and Imposition | 4 |
| MGT | 247 | Small Business Management | 3 |
| MTH | 500 | Technical Mathematics II | 3 |
| | | Elective | 3 |
| | | | 17 |

THIRD SEMESTER

| | | | Credits |
|---|---|---|---|
| GCO | 631 | Platemaking, Substrates & Finishing | 4 |
| GCO | 632 | Press Operations | 4 |
| GCO | 635 | Printing Estimating Practices | 3 |
| CHM | 299 | Chemistry of Lithography | 3 |
| | | Elective | 3 |
| | | | 17 |

FOURTH SEMESTER

| | | | Credits |
|---|---|---|---|
| GCO | 641 | Advanced Typographic Composition | 3 |
| GCO | 642 | Advanced Process Camera and Stripping | 3 |
| GCO | 645 | Printing Processes | 3 |
| CSC | 118 | Fundamentals of Computer Science | 3 |
| | | | 12 |

Co-op Options:
Parallel
Summer

PROGRAM OBJECTIVES

The general objective of the Printing program is to prepare students for employment in the printing industry.

A graduate of the Printing program should be able to:

1. recognize the major printing processes, their products, and the advantages of each process.
2. demonstrate the skills needed for entry-level jobs (as advanced trainees) in the following areas: layout and design, copy preparation and typesetting, stripping (setting up camera negatives for printing), platemaking (transferring copy to be printed onto a metal plate for use on a printing press), presswork and finishing operations (collating, binding, cutting, etc.).
3. evaluate his/her abilities and limitations in various areas of the graphic arts.
4. demonstrate good work habits: promptness, willingness to work, and the ability to accept supervision.
5. demonstrate knowledge of equipment and use appropriate safety precautions when working around such equipment.
6. compare production departments (typesetting and layout, camera, press and bindery) and the contributions each makes to the final product.
7. write clear, concise, legible, and accurate technical reports using standard English.
8. demonstrate skill in basic verbal communications.
9. solve basic math problems related to printing operations.

## RADIOLOGIC TECHNOLOGY (RT)

**Associate Degree/2 years**

This program includes courses in anatomy, physiology, physics, medical terminology and professional ethics, in radiologic equipment and safety, and in English and mathematics. Practical experience with sick and injured patients — under qualified technical supervision in cooperating local hospitals — is an important aspect of the program. Internships in affiliated hospitals — required to meet eligibility requirements for registry exams — are scheduled during the summer.

This program must be completed within 24 consecutive months. Approximately 2400 practicum hours are included to qualify students to take the registry examination. See page 5 for special admission requirements for this program.

**Types of Jobs:** Hospital facilities, doctors and radiologists in private practice, civilian and military government agencies, industry.
**Recommended High School Subjects:** Two years of algebra.

FIRST SEMESTER

| | | | Credits |
|---|---|---|---|
| RAD | 110 | Radiologic Technology I | 5 |
| BIO | 115 | Human Anatomy and Physiology I | 4 |
| MTR | 101 | Medical Terminology I | 3 |
| ENL | 111 | English Composition I | 3 |
| MTH | 103 | College Algebra & Trigonometry I | 3 |
| | | | 18 |

SECOND SEMESTER

| | | | Credits |
|---|---|---|---|
| RAD | 120 | Radiologic Technology II | 7 |
| BIO | 125 | Human Anatomy and Physiology II | 4 |
| PHS | 112 | Introductory Physics | 4 |
| MTH | 104 | College Algebra & Trigonometry II | 3 |
| | | | 18 |

| | | | |
|---|---|---|---|
| RAD | 200 | FIRST SUMMER INTERNSHIP | No Credit |

THIRD SEMESTER

| | | | Credits |
|---|---|---|---|
| RAD | 230 | Radiologic Technology III | 10 |
| PHS | 122 | Radiation Physics | 3 |
| | | Elective-Psychology* | 3 |
| | | | 16 |

FOURTH SEMESTER

| | | | Credits |
|---|---|---|---|
| RAD | 240 | Radiologic Technology IV | 10 |
| ENL | 121 | English Composition II | 3 |
| SOC | 111 | Introduction to Sociology | 3 |
| | | | 16 |

| | | | |
|---|---|---|---|
| RAD | 200 | SECOND SUMMER INTERNSHIP | No Credit |

*Psychology Electives:

| | | | |
|---|---|---|---|
| PSY | 111 | General Psychology | 3 |
| PSY | 201 | Abnormal Psychology | 3 |
| PSY | 241 | Social Psychology | 3 |

NOTE: Radiologic Technology students are exempted from the College's required Physical Education courses.

PROGRAM OBJECTIVES

The general program objective is to provide students with academic and practical experiences to prepare them to pass the National Radiological Technology Registry Examination and to qualify for employment as registered radiologic technologists. Graduates will also be able to transfer to a four-year program in radiologic technology.

Upon completion of the two-year Radiologic Technology program students should be able to:

1. apply knowledge acquired in radiation protection courses in the clinic — as it applies to patients, him or herself, and others.
2. use knowledge of anatomy, positioning, and radiographic techniques to accurately show anatomical structures on a radiograph.
3. determine exposure factors needed to produce the best radiographs possible with minimum radiation exposure to the patient.
4. recognize differences between diagnostic quality and inferior radiographs.
5. exercise discretion and good judgment in all aspects of work.
6. provide for the physical and emotional needs of the patient.
7. recognize patient emergencies and initiate lifesaving first aid.
8. apply knowledge of mathematics in determining exposure factors.
9. use effective communication skills.
10. use correct medical and anatomical terminology in radiologic technology work.
11. apply the necessary knowledge of basic electronics and physics to radiographic work.

## RESPIRATORY THERAPY TECHNICIAN (HC)

**Certificate/16 months**

The Respiratory Therapy Technician program is offered in cooperation with the Harrisburg Area Community College. In addition to course work at The Williamsport Area Community College, students complete specialized respiratory therapy courses in Harrisburg. Clinical training is held at the Divine Providence and Williamsport Hospitals.

The program prepares students for careers in respiratory therapy — which includes assisting in the treatment, management, control, diagnostic evaluation, and care of patients with defects and diseases of the pulmonary system (for example, asthma, cancer, emphysema). Students are required to earn a minimum grade point average of 2.00 and a minimum grade of "C" in each math and science course.

Students seeking admission to this program must meet the general college admission requirements and be accepted to The Williamsport Area Community College. (Please see page 5 for special admission requirements for this program.) On or before March 1 of the student's academic year at The Williamsport Area Community College, a committee of representatives from both colleges will select four students who will be permitted to complete the program at H.A.C.C.

We recommend that students who require additional academic work, based on the results of the college placement tests, enroll in and complete the necessary courses prior to beginning this program.

The Harrisburg Area Community College also offers an associate degree level program leading to registry eligibility. For more information on the associate degree program and on registry eligibility, contact H.A.C.C. at (717) 780-2315.

**Types of Jobs:** Respiratory therapy technician providing patient care in hospitals and clinics.
**Recommended High School Subjects:** Chemistry, biology, two years of algebra.

FIRST SEMESTER

| | | | Credits |
|---|---|---|---|
| MTH | 103 | College Algebra & Trigonometry I | 3 |
| NUR | 711 | Nursing Relationships | 3 |
| BIO | 115 | Human Anatomy and Physiology I | 4 |
| ENL | 111 | English Composition I | 3 |
| PSY | 111 | General Psychology | 3 |
| PED | | Physical Education | 1 |
| | | | 17 |

SECOND SEMESTER

| | | | Credits |
|---|---|---|---|
| BIO | 125 | Human Anatomy and Physiology II | 4 |
| BIO | 201 | Microbiology | 4 |
| CHM | 100 | Fundamentals of Chemistry | 4 |
| ENL | 121 | English Composition II | |
| | | or | 3 |
| ENL | 201 | Fundamentals of Speech | |
| PED | | Physical Education | 1 |
| | | | 16 |

THIRD SEMESTER

| | | | Credits |
|---|---|---|---|
| *Allied Health | 111 | Respiratory Therapy Survey | 3 |

FOURTH SEMESTER

| | | | Credits |
|---|---|---|---|
| *BIO | 230 | Physiological Pathology | 3 |
| *Allied Health | 112 | Respiratory Therapy I | 8 |
| | | | 11 |

SUMMER SESSION

| | | | Credits |
|---|---|---|---|
| *Allied Health | 113 | Respiratory Therapy II | 8 |
| | | | 8 |

*Course work offered at the Harrisburg Area Community College in Harrisburg, Pa., with clinical experiences at The Williamsport Hospital and Divine Providence Hospital, both in Williamsport.

## RETAIL MANAGEMENT (RM)

**Associate Degree/2 years**

This program provides a strong background in marketing, merchandising, retailing, and related business fields.

**Types of Jobs:** Retailers, buyers, wholesalers, purchasing agents, sales managers, salespersons, salesworkers, marketing managers, distribution managers.

FIRST SEMESTER

| | | | Credits |
|---|---|---|---|
| ACC | 112 | Accounting I | 3 |
| MGT | 110 | Principles of Business | 3 |
| MGT | 111 | Business Mathematics | 3 |
| SEC | 111 | Typewriting I | 3 |
| ENL | 111 | English Composition I | 3 |
| PED | | Physical Education | 1 |
| | | | 16 |

SECOND SEMESTER

| | | | Credits |
|---|---|---|---|
| ECO | 201 | Principles of Economics | 3 |
| MGT | 230 | Business Communications | 3 |
| MGT | 231 | Business Law I | 3 |
| MKT | 233 | Retail Principles | 3 |
| ENL | 202 | Fundamentals of Speech | 3 |
| PED | | Physical Education | 1 |
| | | | 16 |

THIRD SEMESTER

| | | | Credits |
|---|---|---|---|
| MKT | 243 | Sales | 3 |
| MKT | 247 | Retail Management | 3 |
| CSC | 118 | Fundamentals of Computer Science | 3 |
| MKT | 240 | Marketing | 3 |
| | | Elective or Approved Co-op | 3 |
| | | | 15 |

FOURTH SEMESTER

| | | | Credits |
|---|---|---|---|
| ADV | 101 | Advertising | 3 |
| MGT | 248 | Supervision & Human Relations | 3 |
| MKT | 245 | Fashion Merchandising and Display | 4 |
| | | Elective-Social Science/Humanities | 3 |
| | | Elective | 3 |
| | | | 16 |

Co-op Options:
Parallel
Summer

### EVENING PROGRAM

Courses required for the associate degree in Retail Management are also offered in the evenings for the convenience of students who are unable to attend classes during the day. Students may complete all courses required for a degree in Retail Management by enrolling in evening courses on a part-time basis. Part-time students may require more than two years to complete the program.

### PROGRAM OBJECTIVES

The general goal of the Retail Management program is to prepare graduates for middle management level jobs in the private sector of the retail and/or wholesale field. As an alternative, graduates may pursue advanced education. The program will also upgrade the skills of those now employed in the field.

The graduate should be able to:

1. review and evaluate the administrative processes and policies for marketing and retail merchandising.
2. evaluate customer behavior and motivation as it applies to a profitable enterprise.
3. develop advertising campaigns using the media that is most effective in terms of cost, consumer appeal, and desired results.
4. explain the steps involved in identifying and segmenting a market.
5. relate in a positive manner to supervisors, peers, and subordinates.
6. demonstrate skills in effective verbal and written communications.
7. apply analytical techniques in preparing financial statements and inventory systems.
8. demonstrate general knowledge of electronic data processing and point of sale equipment.
9. identify the laws affecting business.
10. identify the need for physical fitness and positive leisure activities.

## SECRETARIAL SCIENCE (BS) (Executive)

**Associate Degree/2 years**

This program provides skills in typing, shorthand, and general office practices. Courses in accounting, business, and liberal studies are included in the program.

**Types of Jobs:** Business, commerce, government, industry, or the professions.

FIRST SEMESTER

| | | | Credits |
|---|---|---|---|
| MGT | 230 | Business Communications | 3 |
| MGT | 111 | Business Mathematics | 3 |
| SEC | 111 | Typewriting I | 3 |
| SEC | 114 | Shorthand I | 3 |
| ENL | 111 | English Composition I | 3 |
| PED | | Physical Education | 1 |
| | | | 16 |

SECOND SEMESTER

| | | | Credits |
|---|---|---|---|
| ACC | 112 | Accounting I | 3 |
| SEC | 121 | Typewriting II | 3 |
| SEC | 124 | Shorthand II | 3 |
| SEC | 129 | Secretarial Procedures | 3 |
| | | Elective-Social Science/Humanities | 3 |
| PED | | Physical Education | 1 |
| | | | 16 |

THIRD SEMESTER

| | | | Credits |
|---|---|---|---|
| SEC | 231 | Typewriting III | 3 |
| SEC | 234 | Shorthand Workshop | 6 |
| ENL | 202 | Fundamentals of Speech | 3 |
| MGT | 110 | Principles of Business | 3 |
| | | | 15 |

FOURTH SEMESTER

| | | | Credits |
|---|---|---|---|
| SEC | 244 | Secretarial Workshop | 8 |
| SEC | 245 | Office Internship | 1 |
| MGT | 248 | Supervision and Human Relations | 3 |
| | | Elective | 3 |
| | | | 15 |

Co-op Options:
Parallel
Summer

## SECRETARIAL SCIENCE (BS) (Legal)

**Associate Degree/2 years**

This program provides skills in typing, shorthand, the operation of business machines, and general office practices. Courses in business law and liberal studies are included in the program.

**Types of Jobs:** Business, commerce, and law.

FIRST SEMESTER

| | | | Credits |
|---|---|---|---|
| MGT | 230 | Business Communications | 3 |
| MGT | 111 | Business Mathematics | 3 |
| SEC | 111 | Typewriting I | 3 |
| SEC | 114 | Shorthand I | 3 |
| ENL | 111 | English Composition I | 3 |
| PED | | Physical Education | 1 |
| | | | 16 |

SECOND SEMESTER

| | | | Credits |
|---|---|---|---|
| ACC | 112 | Accounting I | 3 |
| SEC | 121 | Typewriting II | 3 |
| SEC | 124 | Shorthand II | 3 |
| SEC | 129 | Secretarial Procedures | 3 |
| | | Elective-Social Science/Humanities | 3 |
| PED | | Physical Education | 1 |
| | | | 16 |

THIRD SEMESTER

| | | | Credits |
|---|---|---|---|
| SEC | 231 | Typewriting III | 3 |
| SEC | 234 | Shorthand Workshop | 6 |
| ENL | 202 | Fundamentals of Speech | 3 |
| MGT | 231 | Business Law I | 3 |
| | | | 15 |

FOURTH SEMESTER

| | | | Credits |
|---|---|---|---|
| SEC | 244 | Secretarial Workshop | 8 |
| SEC | 245 | Office Internship | 1 |
| MGT | 241 | Business Law II | 3 |
| | | Elective | 3 |
| | | | 15 |

Co-op Options:
Parallel
Summer

## SECRETARIAL SCIENCE (BS) (Medical)

**Associate Degree/2 years**

This program provides skills in typing, shorthand, the operation of business machines, and general office practices. Courses in biology, medical terminology, and liberal studies are included in the program.

**Types of Jobs:** Doctors, dentists, hospitals, and various health occupation offices.

FIRST SEMESTER

| | | | Credits |
|---|---|---|---|
| MGT | 230 | Business Communications | 3 |
| MGT | 111 | Business Mathematics | 3 |
| SEC | 111 | Typewriting I | 3 |
| SEC | 114 | Shorthand I | 3 |
| ENL | 111 | English Composition I | 3 |
| PED | | Physical Education | 1 |
| | | | 16 |

SECOND SEMESTER

| | | | Credits |
|---|---|---|---|
| ACC | 112 | Accounting I | 3 |
| SEC | 121 | Typewriting II | 3 |
| SEC | 124 | Shorthand II | 3 |
| SEC | 129 | Secretarial Procedures | 3 |
| BIO | 121 | Basic Anatomy & Physiology | 3 |
| PED | | Physical Education | 1 |
| | | | 16 |

THIRD SEMESTER

| | | | Credits |
|---|---|---|---|
| SEC | 231 | Typewriting III | 3 |
| SEC | 234 | Shorthand Workshop | 6 |
| ENL | 202 | Fundamentals of Speech | 3 |
| MTR | 101 | Medical Terminology I | 3 |
| | | | 15 |

FOURTH SEMESTER

| | | | Credits |
|---|---|---|---|
| SEC | 244 | Secretarial Workshop | 8 |
| SEC | 245 | Office Internship | 1 |
| | | Elective-Social Science/Humanities | 3 |
| MTR | 102 | Medical Terminology II | 3 |
| | | | 15 |

Co-op Options:
Parallel
Summer

PROGRAM OBJECTIVES

The general objective of the Secretarial Science program is to prepare the student for employment in one of three secretarial fields: executive, legal, or medical. Skills related to each field are stressed. Courses in general secretarial skills are included. The program prepares graduates to enter and advance in the secretarial profession.

The graduate should be able to:

1. demonstrate proficiency in administrative secretarial skills.
2. apply correct terminology, use forms, and demonstrate skills in the area of specialization – executive, legal, or medical.
3. speak and write clearly and effectively.
4. use skills in specialized secretarial office procedures.
5. demonstrate extensive knowledge of modern office equipment and office supplies.
6. apply working knowledge of advanced duplicating and other copying methods, word and information processing, and computation skills.
7. assess and influence behavior among supervisors, peers, and subordinates.
8. apply general knowledge of the social sciences, and understand their effect on our society.
9. identify the need for physical fitness and positive leisure activities.

## SERVICE AND OPERATION OF HEAVY CONSTRUCTION EQUIPMENT (SO)

**Certificate/2 years**

This program trains students to maintain, repair and operate many types of construction equipment. It covers rebuilding internal combustion engines, basic surveying, and complete mechanical safety measures.

**Types of Jobs:** Operation, mechanical repair, service of heavy equipment. Self-employed or work with contractors, dealers, miners, and quarriers.

FIRST SEMESTER

| | | | Credits |
|---|---|---|---|
| SOE | 713 | Service and Operation I (8 weeks) | 7 |
| SOE | 714 | Service and Operation II (8 weeks) | 7 |
| MTH | 710 | Technical Mathematics I | 3 |
| | | | 17 |

SECOND SEMESTER

| | | | Credits |
|---|---|---|---|
| SOE | 725 | Service and Operation III (8 weeks) | 7 |
| SOE | 726 | Service and Operation IV (8 weeks) | 7 |
| ENL | 711 | Communications | 3 |
| | | | 17 |

THIRD SEMESTER

| | | | Credits |
|---|---|---|---|
| SOE | 837 | Service and Operation V (8 weeks) | 7 |
| SOE | 838 | Service and Operation VI (8 weeks) | 7 |
| | | Optional Elective | 0/3 |
| | | | 14/17 |

FOURTH SEMESTER

| | | | Credits |
|---|---|---|---|
| SOE | 847 | Service and Operation VII (8 weeks) | 6 |
| SOE | 848 | Service and Operation VIII (8 weeks) | 6 |
| | | Optional Elective | 0/3 |
| | | | 12/15 |

Co-op Options:
Alternating
Parallel
Summer

### PROGRAM OBJECTIVES

The general objective of the Service and Operation of Heavy Equipment program is to prepare students for jobs in the construction equipment industry.

A graduate of Service and Operation should be able to:

1. practice approved safety procedures in various work situations.
2. read and interpret equipment manuals and issue clear, legible, and complete service reports.
3. identify and manipulate tools of the trade.
4. describe the operation of internal combustion engines and demonstrate skills in troubleshooting, maintaining and repairing such engines.
5. troubleshoot, maintain, and repair the complete power train and related components such as brake systems.
6. demonstrate skills in oxyacetylene welding, cutting, brazing, and electric welding applications.
7. distinguish the various types of hydraulic systems, power shift transmissions, torque converters, fuel systems, and heavy duty electrical systems found on construction equipment; maintain, troubleshoot, and repair these systems.
8. demonstrate the use of transits and hand levels in construction layouts.
9. perform preventive maintenance on all heavy equipment systems.
10. demonstrate the use of various pieces of heavy equipment and use earth-moving techniques accepted by industry.
11. use appropriate math skills to solve applied problems in the field of heavy equipment.
12. identify the personal attributes required for successful relationships with employers, customers, and fellow employees.

## SIGN PAINTING (SP)

**Certificate/2 years (not offered in 1983-84)**

This program provides practical skills in lettering, design, layout and type finishing signs and showcards. Materials, equipment, and safety practices used in painting, building, and sign erecting are stressed.

**Types of Jobs:** Self-employment; work with sign painters, bottlers, outdoor advertisers, department stores, theaters, television stations, and truck fleets.

FIRST SEMESTER

| | | | Credits |
|---|---|---|---|
| SIG | 711 | Sign Painting I | 10 |
| MTH | 710 | Technical Mathematics I | 3 |
| | | | 13 |

SECOND SEMESTER

| | | | Credits |
|---|---|---|---|
| SIG | 721 | Sign Painting II | 10 |
| ENL | 711 | Communications | 3 |
| | | | 13 |

THIRD SEMESTER

| | | | Credits |
|---|---|---|---|
| SIG | 811 | Sign Painting III | 10 |
| | | Elective* | 3 |
| | | | 13 |

FOURTH SEMESTER

| | | | Credits |
|---|---|---|---|
| SIG | 821 | Sign Painting IV | 10 |
| | | Elective* | 3 |
| | | | 13 |

*Suggested Electives

| | | |
|---|---|---|
| ACC | 121 | Elementary Accounting |
| MGT | 247 | Small Business Management |

Co-op Options:
Parallel
Summer

PROGRAM OBJECTIVES

The overall objective of the program is to prepare students for employment as sign painters.

A graduate of the Sign Painting program should be able to:

1. construct the basic alphabet using pencil techniques.
2. use showcard paint in the construction of signs.
3. name, use, and care for brushes and special tools of the sign painting field.
4. lay out and paint paper signs and showcards using basic strokes, construction, and tempera color.
5. create (design, lay out, and paint) simple showcard and paper signs.
6. use bulletin colors, lettering quills, and brushes to produce a variety of signs.
7. letter with bulletin colors on a variety of surfaces including glass, metal, wood, plastic, and paper.
8. design and produce signs using gold leaf techniques.
9. design and produce small billboards.
10. use elementary math operations (addition, subtraction, multiplication, division) including decimals, fractions, and conversions, as they apply to sign painting.
11. write clear, concise, legible, and accurate reports, business memorandums, and business letters.

## SURGICAL TECHNOLOGY (ST)

**Certificate/1 year**

Surgical Technology prepares students to take the National Certification exam — given by the Association of Surgical Technologists and required for employment in this field. Students develop skills in operating room procedures in area hospitals. The program includes classroom instruction in anatomy, physiology and surgical technology. This combination of clinical training and classroom work prepares students to work with surgeons and nurses in hospital operating rooms.

**Types of Jobs:** Member of a surgical team in a hospital operating room and other related areas where surgical techniques are used.

FIRST SEMESTER

| | | | Credits |
|---|---|---|---|
| BIO | 110 | Anatomy & Physiology I | 3 |
| MTR | 101 | Medical Terminology I | 3 |
| SRT | 110 | Principles of Surgical Technology I | 12 |
| | | | 18 |

SECOND SEMESTER

| | | | Credits |
|---|---|---|---|
| SRT | 120 | Principles of Surgical Technology II | 4 |
| SRT | 121 | Clinical Surgical Technology | 10 |
| | | Optional Elective | 0/3 |
| | | | 14/17 |

PROGRAM OBJECTIVES

The general objective is to prepare students to take the National Certification exam required for employment as a certified operating room technician.

The Surgical Technology graduate should be able to:

1. apply background knowledge of the basic sciences, surgical anatomy, and aseptic technique in surgical procedures.
2. describe operating room techniques and their relation to patient care in order to perform tasks assigned by professional nursing personnel.
3. practice good personal hygiene habits and state their effect in reducing infection.
4. describe the interdepartmental relationships between the operating room and other hospital services.
5. identify the need for adhering to hospital policies and procedures, ethics, and medical, moral, and legal codes.
6. describe the development of a rigid surgical conscience, its application in the operating room and its relationship to an uncomplicated post-operative recovery for the patient.
7. apply and, when necessary, modify aseptic principles when encountering unexpected emergency situations.
8. demonstrate knowledge and understanding of all surgical procedures in order to function as a member of the surgical team; give appropriate assistance to the surgeon and meet the needs of the patient.
9. identify and describe the cost, preparation, use, care and after-care of equipment, instruments and supplies, and their importance in the safe and effective performance of surgical procedures.
10. demonstrate awareness of the responsibilities and limitations of the role of the operating room technician and work within these limits.
11. state the extent of liability of operating room technicians and the importance of correct, adequate, direct supervision.
12. describe the organization of the hospital, its physical plant, and personnel requirements, practices and policies.
13. work quickly; use operating room materials economically; demonstrate accuracy, speed, physical stamina and the ability to respond appropriately to emergency situations.
14. demonstrate knowledge of the holistic approach to patient care.

## TECHNICAL ILLUSTRATION (TI)

**Associate Degree/2 years**

This program trains students for jobs in industry as technical illustrators. Students learn to convert engineering drawings into three dimensional illustrations used by engineers and in publications — parts catalogs, sales materials, repair manuals and others. The program includes training in drawing and other art skills. Courses in the humanities, mathematics and communications improve students' potential for advancement.

**Types of Jobs**: Technical illustrator for industry, either in an engineering or publications department. In the engineering field you would produce clear, accurate pictures drawn from blueprints for engineers; in publications, you would produce illustrations for company literature; parts and sales catalogs; maintenance, repair, and assembly manuals, charts, and handbooks.
**Recommended High School Subjects:** Two years of algebra, one year of science.

FIRST SEMESTER

| | | | Credits |
|---|---|---|---|
| EDT | 111 | Basic Drafting I (8 weeks) | 4 |
| EDT | 112 | Basic Drafting II (8 weeks) | 4 |
| ART | 111 | Basic Drawing | 3 |
| ENL | 111 | English Composition I | 3 |
| MTH | 103 | College Algebra & Trigonometry I | 3 |
| | | | 17 |

SECOND SEMESTER

| | | | Credits |
|---|---|---|---|
| EDT | 121 | Power Transmission (8 weeks) | 4 |
| EDT | 122 | Mechanisms (8 weeks) | 4 |
| MTH | 104 | College Algebra & Trigonometry II | 3 |
| PED | | Physical Education | 1 |
| | | Elective* | 3 |
| | | | 15 |

THIRD SEMESTER

| | | | Credits |
|---|---|---|---|
| EDT | 108 | Manufacturing Processes | 3 |
| ART | 121 | Basic Painting | 3 |
| ART | 232 | Lettering and Layout | 3 |
| GCO | 515 | Layout and Design | 3 |
| GCO | 516 | Typographic Composition | 3 |
| PED | | Physical Education | 1 |
| | | Elective* | 3 |
| | | | 19 |

FOURTH SEMESTER

| | | | Credits |
|---|---|---|---|
| ART | 241 | Media and Techniques | 3 |
| GCO | 525 | Process Camera | 3 |
| GCO | 526 | Film Assembly and Imposition | 3 |
| ENL | 121 | English Composition II | 3 |
| | | Elective-General* | 3/4 |
| | | | 15/16 |

*Suggested Electives

| | | | |
|---|---|---|---|
| MGT | 110 | Principles of Business | 3 |
| ENL | 202 | Fundamentals of Speech | 3 |
| GOV | 231 | American Government-National | 3 |
| GOV | 241 | State and Local Government | 3 |
| HIS | 111 | Western Civilization I | 3 |
| HIS | 121 | Western Civilization II | 3 |
| HIS | 231 | U.S.—Survey I | 3 |
| JOU | 232 | Copyreading and Editing | 3 |
| PSY | 111 | General Psychology | 3 |
| SOC | 111 | Introduction to Sociology | 3 |
| ECO | 201 | Principles of Economics | 3 |
| ESC | 100 | Environmental Science | 3 |
| GEL | 105 | Physical Geology | 4 |

Co-op Options:
Parallel
Summer

### PROGRAM OBJECTIVES

The general objective of the Technical Illustration program is to prepare students for jobs as technical illustrators in industry, or for transfer to a baccalaureate degree program.

A graduate of the Technical Illustration program should be able to:

1. convert engineering drawings into three-dimensional illustrations.
2. letter and lay out materials using a variety of mediums — black and white and color — both in line and continuous tone (refers to use of shading or color in illustration).
3. relate technical knowledge to the areas above in order to make effective decisions.
4. follow written and verbal directions.
5. demonstrate respect for equipment and use appropriate safety precautions when working around equipment.
6. demonstrate good work habits: promptness, willingness to work, and receptivity to supervision.
7. use mathematical skills for effective job performance and as required for the development of visualization skills and logical thought processes.
8. communicate clearly, both verbally and in writing.
9. demonstrate knowledge of a lifetime sport which will provide recreation and promote physical fitness.

## TECHNOLOGY STUDIES (TS)
**Associate Degree**

Technology Studies is a flexible program — designed especially for, but not limited to — people currently employed in industry or business. Course selection is based almost entirely upon the goals of the individual student. As many as 30 credits may be awarded through advanced placement, credit by examination, or credit for work/life experience, thus reducing the number of courses to be completed on campus. Most students will complete this program on a part-time basis; therefore, a number of specialized courses will be offered in a rotating sequence to provide increased scheduling opportunities.

The minimum requirements for the Associate Degree in Technology Studies are:

1. Successfully complete a minimum of 60 credit hours of associate degree level courses (see page 82 for definition) in a planned program of study.
2. The 60 credit hours must include at least 18 credits of general education core courses selected from the following:

| | Credits |
|---|---|
| Communications | 6 |
| Mathematics | 6 |
| Natural Sciences | 3/4 |
| Social Sciences and Humanities | 3 |
| | 18/19 |

3. Forty-two credits must be taken as electives. Of these, 30 elective credits must be taken in technical career or vocational courses which are applicable to the Associate of Applied Science degree. Elective courses should be selected primarily on the basis of the student's vocational goals. The electives enable the student to select those vocational and/or general education courses which best meet his/her career, professional, and personal objectives.
4. Students must complete a planned educational program of studies. This plan should be developed in conjunction with an advisor and be filed with the appropriate division director prior to the completion of the first 18 hours of credit.

### INDIVIDUAL CURRICULUM POSSIBILITIES

In consultation with an advisor, students may select precisely those courses which best meet their needs and prepare them to reach their goals. Examples of groups of courses which a student might select in designing his/her program are shown below.

**Industrial Emphasis**—Courses selected may include:

Courses in specialized fields, such as Machine Tool Technology, Electronics, Automotive Technology (based on student interest and course availability)
Industrial and Organizational Psychology
Supervision and Human Relations
Quality Control
Motion and Time Study
Specialized mathematics, such as statistics, applied calculus
Technical Writing

**Engineering Emphasis**—A student taking the Engineer in Training (EIT) courses (see page 79) may use completed EIT courses to fulfill requirements for the Technology Studies Degree. These courses are offered on a rotating, part-time basis and include:

Statics
Strength of Materials I
Dynamics
Fluid Mechanics
Strength of Materials II
Engineering Economics
Engineering Chemistry
Thermodynamics
Engineering Physics
Engineering Electronics

**Management and Supervision Emphasis**—Courses selected may include:

Principles of Business
Business Communications
Economics
Accounting
Supervision and Human Relations
Small Business Management
Psychology
Business Law
Specialized Mathematics
Computer Science
Specialized technical courses directed toward the student's vocational objectives

### EVENING PROGRAM

Courses required for the associate degree in Technology Studies are also offered in the evenings for the convenience of students who are unable to attend classes during the day. Students may complete all courses required for a degree in Technology Studies by enrolling in evening courses on a part-time basis. Part-time students may require more than two years to complete the program.

### PROGRAM OBJECTIVES

The general objective of the Technology Studies program is to enable the employed person to upgrade his/her skills and knowledge, whether for personal or professional reasons.

The graduate should be able to:

1. demonstrate potential for growth and apply the skills and competencies acquired.
2. formulate ideas logically and organize them into a productive plan to accomplish a chosen goal.
3. demonstrate increased vocational knowledge and skills.
4. illustrate an attitude of responsibility to self, employer, and community.
5. communicate effectively in personal and job related activities.
6. demonstrate comprehensive knowledge of communication and mathematical skills.
7. apply general knowledge of the social and natural sciences and understand their effect on our environment.

## TOOL DESIGN TECHNOLOGY (TD)

**Associate Degree/2 years**

This program provides instruction in drafting, tool production techniques and tool drawings. It emphasizes planning and making drawings of special mechanical devices (dies, gages, cutting tools, jigs, fixtures) ranging from simple hand tools to complex progressive dies (a type of machine tool). The student is taught to write programs for production jobs on tape-controlled machines.

**Types of Jobs:** Tool, machine, and product designer; numerical programmer, design drafting, estimator, and systems program designer.
**Recommended High School Subjects:** Two years of algebra.
*GENERAL ELECTIVES are courses chosen from outside your program of concentration.

FIRST SEMESTER

| | | | Credits |
|---|---|---|---|
| EDT | 108 | Manufacturing Processes | 3 |
| EDT | 111 | Basic Drafting I (8 weeks) | 4 |
| EDT | 112 | Basic Drafting II (8 weeks) | 4 |
| ENL | 111 | English Composition I | 3 |
| MTH | 103 | College Algebra & Trigonometry I | 3 |
| PED | | Physical Education | 1 |
| | | | 18 |

SECOND SEMESTER

| | | | Credits |
|---|---|---|---|
| EDT | 121 | Power Transmission (8 weeks) | 4 |
| EDT | 122 | Mechanisms (8 weeks) | 4 |
| ENL | 121 | English Composition II | 3 |
| MTH | 104 | College Algebra & Trigonometry II | 3 |
| PED | | Physical Education | 1 |
| | | | 15 |

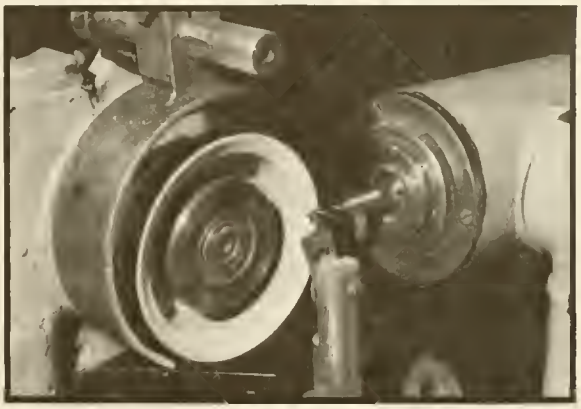
THIRD SEMESTER

| | | | Credits |
|---|---|---|---|
| TDT | 231 | Tool Drafting (8 weeks) | 4 |
| TDT | 232 | Fixture Design (8 weeks) | 4 |
| PHS | 100 | Physics-Mechanics | 4 |
| | | Elective-General* | 3/4 |
| | | | 15/16 |

FOURTH SEMESTER

| | | | Credits |
|---|---|---|---|
| TDT | 241 | Gage Design and Programming (8 weeks) | 4 |
| TDT | 242 | Die Design (8 weeks) | 4 |
| PHS | 106 | Introduction to Metallurgy | 4 |
| | | Elective-General* | 3/4 |
| | | | 15/16 |

Co-op Options:
Parallel
Summer



PROGRAM OBJECTIVES

The general objective of this program is to train students in the skills needed for jobs in tool design.

A graduate of the Tool Design Technology program should be able to:

1. describe and apply the various manufacturing methods related to tool design.
2. select cutting tool materials to satisfy various metal removal operations.
3. apply tolerance limits and fits to meet manufacturing requirements.
4. apply calculations to determine cutting speeds and feeds for various metal removal applications.
5. design jigs and fixtures to hold tools and workpieces for the various metal removal applications.
6. design various kinds of gages and gaging setups to insure quality control.
7. write numerical control programs.
8. design piercing, stamping, and forming dies.
9. apply the basic principles of physics and metallurgy to the tool design process.
10. use mathematical skills to solve design problems.
11. communicate effectively in small group and interpersonal situations that may occur in industry.
12. participate as an informed citizen in a democratic society based on values acquired in humanities and social science courses.
13. develop and use the fundamental skills provided through exposure to lifetime sports.

## WELDING (WE)
**Certificate/2 years**

This program offers practical skills training in welding and a background in welding theory. It emphasizes electric, oxyacetylene, and inert gas shielded methods of welding.

**Types of Jobs:** Welder, welder operator, fitter, specialist, supervisor, and inspector.

FIRST SEMESTER

| | | | Credits |
|---|---|---|---|
| WEL | 712 | Acetylene Welding | 13 |
| MTH | 710 | Technical Mathematics I | 3 |
| | | | 16 |

SECOND SEMESTER

| | | | Credits |
|---|---|---|---|
| WEL | 722 | Electric Welding | 13 |
| ENL | 711 | Communications | 3 |
| | | | 16 |

THIRD SEMESTER

| | | | Credits |
|---|---|---|---|
| WEL | 832 | Inert Gas Welding | 13 |
| EDT | 107 | Blueprint Reading | 2 |
| | | Optional Elective | 0/3 |
| | | | 15/18 |

FOURTH SEMESTER

| | | | Credits |
|---|---|---|---|
| WEL | 842 | Welding (Advanced) | 13 |
| | | Optional Elective | 0/3 |
| | | | 13/16 |

Co-op Options:
Parallel
Summer

PROGRAM OBJECTIVES

The general objective of this program is to prepare the student for jobs in welding.

A graduate of the Welding program should be able to:

1. demonstrate skills in oxyacetylene, shielded metal arc, gas tungsten arc, and gas metallic arc welding processes.
2. operate welding equipment.
3. use safe welding techniques in shop and field operations.
4. distinguish the types of welding power sources (electric, gas, etc.), their characteristics, uses, and limitations.
5. inspect welding jobs using visual, destructive, and non-destructive testing methods.
6. construct weldments (objects made by welding metal) from sketches, blueprints or verbal instructions; understand welding symbols.
7. select the proper welding process, welding procedures, supplies, etc., based on cost limitations.
8. use simple shop methods for determining types of metals (ferrous and non-ferrous).
9. apply knowledge of the physical and mechanical properties of metals, as related to weldability, during the welding process.
10. duplicate welding qualification tests according to specifications of the American Welding Society, the American Society of Mechanical Engineers and the American Petroleum Institute Codes.
11. develop positive social attitudes and good work habits.
12. use the appropriate mathematical skills and competencies in solving applied problems in the field of welding.
13. demonstrate basic skills in speech and technical writing.

## WOOD PRODUCTS TECHNOLOGY (WD)

**Associate Degree/2 years**

Wood Products Technology prepares students for mid-management and management positions in the wood processing and manufacturing industries. This program will also improve the management capabilities of people presently employed in the wood industry. The program combines courses in wood processing with courses in business to prepare students for various types of jobs. Students gain practical experience at the College's sawmill and through a co-op or internship experience.

**Types of Jobs:** Lumber inspector, dry kiln operator, sawyer, trimmer, edger, lumber yard supervisor, quality control technician, log and lumber buyer or seller, wood products sales, mill manager, planer mill manager, equipment sales.

FIRST SEMESTER

| | | | Credits |
|---|---|---|---|
| WPT | 111 | Wood Properties and Utilization | 3 |
| FOR | 111 | Dendrology (Tree & Shrub Identification) | 3 |
| FOR | 113 | Forest Mensuration | 3 |
| MTH | 500 | Technical Mathematics II | 3 |
| ENL | 111 | English Composition I | 3 |
| PED | | Physical Education | 1 |
| | | | 16 |

SECOND SEMESTER

| | | | Credits |
|---|---|---|---|
| WPT | 121 | Lumber and Log Grading | 3 |
| WPT | 122 | Sawmilling I | 3 |
| WPT | 123 | Lumber Drying | 3 |
| MGT | 110 | Principles of Business | 3 |
| ENL | 201 | Technical Writing | 3 |
| PED | | Physical Education | 1 |
| | | | 16 |

THIRD SEMESTER

| | | | Credits |
|---|---|---|---|
| WPT | 231 | Wood Industry Co-op/Internship | 3 |
| WPT | 232 | Sawmilling II | 3 |
| FOR | 242 | Forest Products | 3 |
| ACC | 112 | Accounting I | 3 |
| MKT | 240 | Marketing | 3 |
| | | | 15 |

FOURTH SEMESTER

| | | | Credits |
|---|---|---|---|
| WPT | 233 | Quality Control | 3 |
| WPT | 243 | Production Management | 3 |
| WPT | 244 | Equipment and Machinery | 3 |
| MGT | 248 | Supervision and Human Relations | 3 |
| | | Elective | 3 |
| | | | 15 |

Co-op Options:
Parallel
Summer

PROGRAM OBJECTIVES

The objective of Wood Products Technology is to prepare students for employment in the wood industry and related businesses and to improve the management capabilities of those presently employed in this industry.

A graduate should be able to:

1. identify the important commercial wood species and relate their characteristics to their potential uses.
2. identify selected species of trees and shrubs by their scientific and common names, general uses, site characteristics and geographic distribution.
3. describe the processes involved in converting logs into various wood products.
4. grade hardwood and softwood logs and lumber based on industry standards.
5. make recommendations concerning replacement, addition, and upgrading of machinery and personnel.
6. describe the process of finding markets, methods of merchandising, distribution from manufacturer to consumer, and mark-up procedures.
7. evaluate the quality of wood products at various stages of manufacturing.
8. apply skills in buying logs, processing wood, or marketing wood products.
9. demonstrate familiarity with the types, operation, and basic maintenance of the more important machines used in wood processing.
10. demonstrate familiarity with the principles of cutting lumber to obtain the best grade.
11. demonstrate basic skills in maintaining sawmills.
12. demonstrate basic skills in handling, stacking, and kiln and air drying of lumber.
13. apply knowledge of business organization and skills — planning, economics, financing, business law, worker's compensation, overhead determination, and profit and loss statements.
14. demonstrate leadership techniques and skills in interpersonal relationships needed to supervise others.
15. understand the basic concepts, techniques, procedures, and principles of accounting and bookkeeping.
16. write accurate, grammatically correct technical reports and demonstrate skill in verbal communication.
17. solve basic problems in arithmetic, algebra and trigonometry and apply math skills in solving practical problems related to the wood products industry.
18. demonstrate fundamental skills in lifetime sports.

## WORD PROCESSING (WP)

**Associate Degree/2 years**

Students acquire a background in business and learn the specialized skills used in word processing operations. Graduates are qualified for jobs as word processing equipment operators and as first-line supervisors in word processing centers.

Types of Jobs: Word processing equipment operator and word processing center supervisor.

FIRST SEMESTER

| | | | Credits |
|---|---|---|---|
| CSC | 118 | Fundamentals of Computer Science | 3 |
| ENL | 111 | English Composition I | 3 |
| MGT | 110 | Principles of Business | 3 |
| MGT | 230 | Business Communications | 3 |
| SEC | 111 | Typewriting I | 3 |
| PED | | Physical Education | 1 |
| | | | 16 |

SECOND SEMESTER

| | | | Credits |
|---|---|---|---|
| CSC | | Computer Science Elective | 3 |
| ENL | | English Elective | 3 |
| MGT | 111 | Business Mathematics | 3 |
| SEC | 121 | Typewriting II | 3 |
| WDP | 121 | Word Processing I | 3 |
| PED | | Physical Education | 1 |
| | | | 16 |

THIRD SEMESTER

| | | | Credits |
|---|---|---|---|
| ACC | 112 | Accounting I | 3 |
| WDP | 231 | Machine Transcription and Office Procedures | 3 |
| WDP | 232 | Word Processing II | 3 |
| | | Business/Computer Science Elective | 3 |
| | | Elective | 3 |
| | | | 15 |

FOURTH SEMESTER

| | | | Credits |
|---|---|---|---|
| MGT | 248 | Supervision and Human Relations | 3 |
| WDP | 241 | Word Processing III | 3 |
| WDP | 242 | Word Processing Internship* | 3 |
| | | Elective | 3 |
| | | Social Science/Humanities Elective | 3 |
| | | | 15 |

*A cooperative education experience may be substituted for Word Processing Internship.

PROGRAM OBJECTIVES

The primary objective of the Word Processing program is to prepare students for positions as word processing operators and first-line supervisors of word processing centers.

The graduate should be able to:

1. operate various types of word processing equipment.
2. select the best machine and methods to handle a given word processing task.
3. communicate effectively in writing.
4. edit materials, applying the rules of business writing, grammar, punctuation and transcription.
5. produce final copy from various forms of input: handwritten copy, machine dictation, etc.
6. demonstrate extensive knowledge and skill in using transcription equipment.
7. operate various types of advanced word processing printing devices.
8. handle communications between an information processor and a document printer.
9. design and prepare an effective procedures manual.
10. manage work flow by prioritizing work.
11. understand the role of management in word processing: personnel selection, training, and motivation.
12. demonstrate extensive knowledge of modern office equipment and office supplies.
13. demonstrate ability to reason logically, to analyze, and to evaluate information and to apply these processes to word processing problems.
14. relate in a positive manner to supervisors, peers and subordinates.
15. apply general knowledge of the social sciences.
16. identify the need for physical fitness and positive leisure activities.

## General Studies

This program offers the equivalent of the first two years in a four-year Bachelor of Arts or Bachelor of Science program. The program is flexible — students select courses based on the requirements of the four-year college to which they plan to transfer. (We recommend that students identify the college to which they plan to transfer as soon as possible.) A faculty advisor works with each student to design a program that best meets the student's future plans. Cooperative education options are available to students in General Studies.

OBJECTIVES

Upon completion of the General Studies Program the student will:

1. have general knowledge in each of the following areas: Communications, Mathematics and/or Statistics, Humanities, Social Sciences, Natural Sciences, and the development and maintenance of good health.
2. have comprehensive knowledge in one or more of the following areas: Communications, Mathematics and/or Statistics, Humanities, Social Sciences, Natural Sciences.
3. have the academic background needed to transfer into related baccalaureate degree programs.
4. demonstrate the ability to reason logically, to analyze, synthesize, and evaluate information, and to apply mathematical reasoning processes and/or the scientific method.
5. have an open mind and the willingness to modify performance or attitudes when faced with sufficient reason to do so.
6. produce work that demonstrates the ability to integrate various academic and practical experiences.
7. display an awareness of our cultural traditions and a sensitivity toward the traditions of other cultures.
8. display acceptable social values and attitudes in day-to-day activity, including productive citizenship and responsibility toward self and others.
9. experience greater joy in living because of an increased awareness of the social, cultural, and natural environments.

GRADUATION REQUIREMENTS

1. Successfully complete the College's graduation requirements for all Associate Degree Programs. (See pg. 125.)
2. Successfully complete a minimum of 60 credits of Associate Degree level course work (courses numbered 100 - 299) selected from the General Education Core areas (as defined below) plus four credits in health and physical education.

GENERAL EDUCATION CORE

**Communications**
English
Languages
Speech

**Quantitative Concepts & Skills**
Mathematics
Statistics

**Humanities**
Philosophy
History
Government

**Social Sciences**
Economics
Psychology
Sociology

**Natural Sciences**
Biology
Chemistry
Physics
Environmental Science
Geology
Geography

Appropriate associate degree courses in other subject areas may be substituted for the General Education Core courses with the prior written approval of the student's advisor and Division Director.

3. Successfully complete 25/26 credits of Associate Degree level General Education Core courses which must include:

| | |
|---|---|
| Communications | 6 credits |
| Quantitative Concepts and Skills | 6 credits |
| Humanities | 3 credits |
| Social Science | 3 credits |
| Natural Science (to include at least 3 hours of laboratory) | 7-8 credits |

4. Successfully complete 2 credits in health and 2 credits in physical education OR 4 credits in physical education. Part-time students may be exempt from this requirement.
5. Complete all placement testing required by the College. Students must demonstrate basic mastery of English, reading, and mathematics through placement testing or through successful completion of appropriate courses (Developmental Studies courses) designed to provide basic skills and competencies in these areas.

### The General Studies Program Curriculum (GS)

To meet their individual needs, students may schedule courses other than those listed below (upon the recommendation of the student's academic advisor and approval by the appropriate Division Director). It is strongly recommended that as early as possible the student review the requirements of the particular program and the institution he/she plans to attend upon completing the General Studies program. Elective credits can then be selected to meet these requirements.

FIRST SEMESTER

| | | | Credits |
|---|---|---|---|
| ENL | 111 | English Composition I | 3 |
| MTH | 101 | Introduction to Mathematics I | |
| | | or | 3 |
| MTH | 103 | College Algebra & Trigonometry I | |
| PED | | Physical Education | 1 |
| | | Elective-Humanities | 3 |
| | | Elective-Natural Science* | 3-4 |
| | | Elective-General Core | 3 |
| | | | 16-17 |

SECOND SEMESTER

| | | | Credits |
|---|---|---|---|
| ENL | 121 | English Composition II | 3 |
| MTH | 102 | Introduction to Mathematics II | |
| | | or | 3 |
| MTH | 104 | College Algebra & Trigonometry II | |
| PED | | Physical Education | 1 |
| | | Elective-Social Science | 3 |
| | | Elective-Natural Science* | 3-4 |
| | | Elective-General Core | 3 |
| | | | 16-17 |

THIRD SEMESTER

| | Credits |
|---|---|
| **An elective program based on the student's major educational and vocational interests. Completion of Physical Education requirement. | |
| | 16-18 Credits |

FOURTH SEMESTER

| | Credits |
|---|---|
| **An elective program based on the student's major educational and vocational interests. | |
| | 16-18 Credits |

*To include at least one course with a three-hour laboratory.

**Elective credits may come from any 100 or 200 level associate degree courses offered by the College. We recommend that most of these credits be taken in the General Education Core discipline areas, especially if students plan to transfer to four-year degree programs.

*Courses in other subject areas must be approved by the student's advisor and Division Director.*

## Curriculum Guides

Students who plan professional or semi-professional preparation in the arts and sciences may begin their undergraduate studies at The Williamsport Area Community College. Students who plan to transfer to four-year institutions to complete the requirements for the baccalaureate degree should schedule courses that meet the requirements of the institution to which they plan to transfer. The students' success in transferring to a particular college will largely depend on the quality of academic achievement at The Williamsport Area Community College.

Curriculum guides for professional careers requiring education beyond an associate degree are shown below.

1. Business Administration Emphasis
2. Communications Emphasis
3. Education Emphasis
4. Math-Science Emphasis
5. Pre-Law Emphasis
6. Pre-Medical Emphasis
7. Pre-Theological Emphasis
8. Social Work Emphasis

The curriculum guides which follow are recommended (not required) programs.

### Business Administration Emphasis

This program is designed for students who plan to transfer to a four-year college or university to earn a baccalaureate degree in Business Administration. Career possibilities for students who complete a four-year program include accounting, economics, finance, foreign commerce, economic geography, industrial management, personnel management, insurance, marketing, and real estate.

FIRST SEMESTER

| | | | Credits |
|---|---|---|---|
| ENL | 111 | English Composition I | 3 |
| MTH | 103 | College Algebra & Trigonometry I | 3 |
| HIS | 111 | Western Civilization I | |
| | | or | 3 |
| HIS | 231 | United States-Survey I | |
| MGT | 110 | Principles of Business | 3 |
| PED | | Physical Education | 1 |
| | | Elective-General Core | 3 |
| | | | 16 |

SECOND SEMESTER

| | | | Credits |
|---|---|---|---|
| ENL | 121 | English Composition II | |
| | | or | 3 |
| ENL | 201 | Technical Writing | |
| MTH | 201 | Elementary Statistics | 3 |
| HIS | 121 | Western Civilization II | |
| | | or | 3 |
| HIS | 241 | United States-Survey II | |
| ECO | 201 | Principles of Economics | 3 |
| PED | | Physical Education | 1 |
| | | Elective-General Core | 3 |
| | | | 16 |

THIRD SEMESTER

| | | | Credits |
|---|---|---|---|
| ENL | 202 | Fundamentals of Speech | 3 |
| ACC | 112 | Accounting I | 3 |
| MGT | 231 | Business Law I | 3 |
| PSY | 111 | General Psychology | 3 |
| PED | | Physical Education | 1 |
| | | Elective-Natural Science | 3-4 |
| | | | 16-17 |

FOURTH SEMESTER

| | | | Credits |
|---|---|---|---|
| ACC | 122 | Accounting II | 3 |
| MGT | 241 | Business Law II | 3 |
| CSC | 118 | Fundamentals of Computer Science | 3 |
| PED | | Physical Education | 1 |
| | | Elective-General Core | 3 |
| | | Elective-Natural Science | 3-4 |
| | | | 16-17 |

### Communications Emphasis

The program is designed for students planning careers in the field of communications. Career possibilities include: advertising, broadcasting, freelance writing, journalism and public relations. The intent of this program is not to prepare students for immediate employment upon graduation. It offers students opportunities to explore various careers in mass communications while completing course work designed to transfer to a four-year college or university.

FIRST SEMESTER

| | | | Credits |
|---|---|---|---|
| ENL | 111 | English Composition I | 3 |
| JOU | 111 | News Writing | |
| | | or | 3 |
| BRC | 123 | News Writing for Radio | |
| JOU | 113 | Principles of News Photography | 3 |
| MTH | 101 | Introduction to Mathematics I | 3 |
| PED | | Physical Education | 1 |
| | | Elective-General Core | 3 |
| | | | 16 |

SECOND SEMESTER

| | | | Credits |
|---|---|---|---|
| ENL | 121 | English Composition II | 3 |
| BRC | 241 | Survey of Radio Industry | 2 |
| PSY | 111 | General Psychology | 3 |
| MTH | 102 | Introduction to Mathematics II | 3 |
| HIS | 111 | Western Civilization I | 3 |
| PED | | Physical Education | 1 |
| | | | 15 |

THIRD SEMESTER

| | | | Credits |
|---|---|---|---|
| ENL | 235 | Creative Writing | 3 |
| JOU | 231 | Feature Writing | 3 |
| SOC | 111 | Introduction to Sociology | 3 |
| PED | | Physical Education | 1 |
| | | Elective-General Core | 3 |
| | | Elective-Natural Science | 3-4 |
| | | | 16-17 |

FOURTH SEMESTER

| | | | Credits |
|---|---|---|---|
| ENL | 201 | Technical Writing | 3 |
| ENL | 202 | Fundamentals of Speech | 3 |
| ADV | 101 | Principles of Advertising | 3 |
| PED | | Physical Education | 1 |
| | | Elective-General Core | 3 |
| | | Elective-Natural Science | 3-4 |
| | | | 16-17 |

### Education Emphasis

The Education Emphasis is modeled on the first two years of a four-year professional education curriculum. Students have the opportunity to complete much of their general academic course work and to become familiar with education as a career. Students who enroll in this program usually go on to earn a baccalaureate degree. Graduates who choose not to continue their education may find jobs as teachers' aides, classroom assistants or in other paraprofessional areas.

FIRST SEMESTER

| | | | Credits |
|---|---|---|---|
| ENL | 111 | English Composition I | 3 |
| EDU | 111 | Introduction to Education | 3 |
| PSY | 111 | General Psychology | 3 |
| MTH | 101 | Introduction to Mathematics I | |
| | | or | 3 |
| MTH | 103 | College Algebra & Trigonometry I | |
| PED | | Physical Education | 1 |
| | | Elective-General Core | 3 |
| | | | 16 |

SECOND SEMESTER

| | | | Credits |
|---|---|---|---|
| ENL | 121 | English Composition II | 3 |
| ECO | 201 | Principles of Economics | 3 |
| SOC | 121 | Introduction to Social Work | 3 |
| MTH | 102 | Introduction to Mathematics II | |
| | | or | 3 |
| MTH | 104 | College Algebra & Trigonometry II | |
| PED | | Physical Education | 1 |
| | | Elective-General Core | 3 |
| | | | 16 |

THIRD SEMESTER

| | | | Credits |
|---|---|---|---|
| MTH | 201 | Elementary Statistics | 3 |
| EDU | 121 | Children's & Young Adult Literature | 3 |
| HIS | 111 | Western Civilization I | 3 |
| PED | | Physical Education | 1 |
| | | Elective-General Core | 3 |
| | | Elective-Natural Science | 3-4 |
| | | | 16-17 |

FOURTH SEMESTER

| | | | Credits |
|---|---|---|---|
| ENL | 202 | Fundamentals of Speech | 3 |
| PSY | 231 | Educational Psychology | 3 |
| HIS | 121 | Western Civilization II | 3 |
| PED | | Physical Education | 1 |
| | | Elective-General Core | 3 |
| | | Elective-Natural Science | 3-4 |
| | | | 16-17 |

### Math-Science Emphasis

Students with a strong background in mathematics and science will find many opportunities in such fields as education, engineering, research, actuarial science, time-study analysis, and economics. They may also find careers as mathematical or scientific technicians in business, industry, and government.

FIRST SEMESTER

| | | | Credits |
|---|---|---|---|
| ENL | 111 | English Composition I | 3 |
| MTH | 103 | College Algebra & Trigonometry I | |
| | | or | 3-4 |
| MTH | 238 | Calculus I | |
| HIS | 111 | Western Civilization I | |
| | | or | 3 |
| HIS | 231 | United States-Survey I | |
| | | Laboratory Science (Biology, Chemistry, Physics, or Geology) | 4 |
| ECO | 201 | Principles of Economics | 3 |
| PED | | Physical Education | 1 |
| | | | 17-18 |

SECOND SEMESTER

| | | | Credits |
|---|---|---|---|
| ENL | 121 | English Composition II | 3 |
| MTH | 104 | College Algebra & Trigonometry II | |
| | | or | 3-4 |
| MTH | 248 | Calculus II | |
| HIS | 121 | Western Civilization II | |
| | | or | 3 |
| HIS | 241 | United States-Survey II | |
| | | Laboratory Science (Biology, Chemistry, Physics, or Geology) | 4 |
| PED | | Physical Education | 1 |
| | | Elective-General Core | 3 |
| | | | 17-18 |

THIRD SEMESTER

| | | | Credits |
|---|---|---|---|
| | | Literature or Sociology | 3 |
| MTH | 201 | Elementary Statistics | 3 |
| | | Laboratory Science (Biology, Chemistry, Physics, or Geology) | 4 |
| | | Computer Science | 3 |
| PED | | Physical Education | 1 |
| | | Elective-General Core | 3 |
| | | | 17 |

FOURTH SEMESTER

| | | | Credits |
|---|---|---|---|
| | | Literature or Sociology | 3 |
| MTH | 204 | Matrix Algebra | 3 |
| | | Laboratory Science (Biology, Chemistry, Physics, or Geology) | 4 |
| | | Computer Science | 3 |
| PED | | Physical Education | 1 |
| | | Elective-General Core | 3 |
| | | | 17 |

### Pre-Law Emphasis

The student who plans to enter law school should develop a program which includes a broad base of liberal studies. The Association of American Law Schools recommends that programs emphasize the following:

1. Comprehension and expression in words
2. Critical understanding of human institutions and values
3. Creative power in thinking

The program below is based on these recommendations. Modifications in this program should be planned in conjunction with the pre-law advisor.

FIRST SEMESTER

| | | | Credits |
|---|---|---|---|
| ENL | 111 | English Composition I | 3 |
| MTH | 103 | College Algebra & Trigonometry I | |
| | | or | 3-4 |
| MTH | 238 | Calculus I | |
| HIS | 111 | Western Civilization I | 3 |
| PSY | 111 | General Psychology | 3 |
| PED | | Physical Education | 1 |
| | | Elective-General Core | 3 |
| | | | 16-17 |

SECOND SEMESTER

| | | | Credits |
|---|---|---|---|
| ENL | 121 | English Composition II | 3 |
| MTH | 104 | College Algebra & Trigonometry II | |
| | | or | 3-4 |
| MTH | 248 | Calculus II | |
| HIS | 121 | Western Civilization II | 3 |
| SOC | 111 | Introduction to Sociology | 3 |
| PED | | Physical Education | 1 |
| | | Elective-General Core | 3 |
| | | | 16-17 |

THIRD SEMESTER

| | | | Credits |
|---|---|---|---|
| ENL | 202 | Fundamentals of Speech | 3 |
| ACC | 112 | Principles of Accounting I | 3 |
| PHL | 111 | Introduction to Philosophical Analysis | 3 |
| GOV | 231 | American Government-National | 3 |
| PED | | Physical Education | 1 |
| | | Elective-Natural Science | 3-4 |
| | | | 16-17 |

FOURTH SEMESTER

| | | | Credits |
|---|---|---|---|
| ECO | 201 | Principles of Economics | 3 |
| ACC | 122 | Principles of Accounting II | 3 |
| PHL | 121 | Ethics and Political Analysis | 3 |
| GOV | 241 | State and Local Government | 3 |
| PED | | Physical Education | 1 |
| | | Elective-Natural Science | 3-4 |
| | | | 16-17 |

### Pre-Medical Emphasis

The Pre-Medical Emphasis offers preparation for careers in medicine, pharmacy, dentistry, optometry, veterinary medicine, chiropractic, other health professions, and scientific research. The program also meets the needs of students interested in fields like chemistry, physics and biology. Because of the rigorous and time-consuming nature of the medical programs — which include much training in clinical laboratories and patient-related experiences — students should have aptitudes in mathematics and science. Laboratory experience and manual dexterity are also important.

FIRST SEMESTER

| | | | Credits |
|---|---|---|---|
| ENL | 111 | English Composition I | 3 |
| MTH | 103 | College Algebra & Trigonometry I | |
| | | or | 3-4 |
| MTH | 238 | Calculus I | |
| HIS | 111 | Western Civilization I | |
| | | or | 3 |
| HIS | 231 | United States-Survey I | |
| BIO | 113 | General Biology I | 4 |
| CHM | 111 | General Chemistry I | 4 |
| | | | 17-18 |

SECOND SEMESTER

| | | | Credits |
|---|---|---|---|
| ENL | 121 | English Composition II | 3 |
| MTH | 104 | College Algebra & Trigonometry II | |
| | | or | 3-4 |
| MTH | 248 | Calculus II | |
| PSY | 111 | General Psychology | 3 |
| BIO | 123 | General Biology II | 4 |
| CHM | 121 | General Chemistry II | 4 |
| PED | | Physical Education | 1 |
| | | | 18-19 |

THIRD SEMESTER

| | | | Credits |
|---|---|---|---|
| | | Literature or Sociology | 3 |
| PHS | 116 | General Physics I | 4 |
| BIO | 115 | Human Anatomy & Physiology I | 4 |
| PED | | Physical Education | 1 |
| | | Elective-General Core | 3-6 |
| | | | 15-18 |

FOURTH SEMESTER

| | | | Credits |
|---|---|---|---|
| | | Literature or Sociology | 3 |
| PHS | 126 | General Physics II | 4 |
| BIO | 125 | Human Anatomy & Physiology | 4 |
| BIO | 201 | Microbiology | 4 |
| PED | 201 | Personal & Community Health | 2 |
| | | | 17 |

### Pre-Thaological Emphasis

This program is designed for students planning careers in religious education, the missionary field, or the ministry. It is based on recommendations set forth by the Association of Theological Schools. They advise that students acquire a background in the liberal arts, complemented by a major in either the humanities or the social sciences. Following graduation, students should plan to complete their education at a four-year college or university.

FIRST SEMESTER

| | | | Credits |
|---|---|---|---|
| ENL | 111 | English Composition I | 3 |
| MTH | 101 | Introduction to Mathematics I | |
| | | or | 3 |
| MTH | 103 | College Algebra & Trigonometry I | |
| PSY | 111 | General Psychology | 3 |
| HIS | 111 | Western Civilization I | 3 |
| PED | | Physical Education | 1 |
| | | Elective-General Core | 3 |
| | | | 16 |

SECOND SEMESTER

| | | | Credits |
|---|---|---|---|
| ENL | 121 | English Composition II | 3 |
| MTH | 102 | Introduction to Mathematics II | |
| | | or | 3 |
| MTH | 104 | College Algebra & Trigonometry II | |
| SOC | 111 | Introduction to Sociology | 3 |
| HIS | 111 | Western Civilization II | 3 |
| PED | | Physical Education | 1 |
| | | Elective-General Core | 3 |
| | | | 16 |

THIRD SEMESTER

| | | | Credits |
|---|---|---|---|
| ENL | 202 | Fundamentals of Speech | 3 |
| PHL | 111 | Introduction to Philosophical Analysis | 3 |
| SOC | 231 | Marriage and the Family | 3 |
| PED | | Physical Education | 1 |
| | | Elective-Social Science | 3 |
| | | Elective-Natural Science | 3-4 |
| | | | 16-17 |

FOURTH SEMESTER

| | | | Credits |
|---|---|---|---|
| ECO | 201 | Principles of Economics | 3 |
| PHL | 121 | Ethics and Political Philosophy | 3 |
| PSY | 203 | Developmental Psychology | 3 |
| PED | | Physical Education | 1 |
| | | Elective-Social Science | 3 |
| | | Elective-Natural Science | 3-4 |
| | | | 16-17 |

### Social Work Emphasis

The Social Work Emphasis prepares students for various careers in the human services. Graduates may find employment as paraprofessionals in such diverse fields as child care, gerontology, mental health, mental retardation, or social work. Or, students may transfer to a baccalaureate degree program at a four-year college or university. All courses in this program are designed to provide the student with both entry-level career skills and college transfer credit.

FIRST SEMESTER

| | | | Credits |
|---|---|---|---|
| ENL | 111 | English Composition I | 3 |
| SOC | 111 | Introduction to Sociology | 3 |
| MTH | 101 | Introduction to Mathematics I | |
| | | or | 3 |
| MTH | 103 | College Algebra & Trigonometry I | |
| PSY | 111 | General Psychology | 3 |
| PED | | Physical Education | 1 |
| | | Elective-General Core | 3 |
| | | | 16 |

SECOND SEMESTER

| | | | Credits |
|---|---|---|---|
| ENL | 121 | English Composition II | 3 |
| SOC | 121 | Introduction to Social Work | 3 |
| MTH | 102 | Introduction to Mathematics II | |
| | | or | 3 |
| MTH | 104 | College Algebra & Trigonometry II | |
| PSY | 201 | Abnormal Psychology | 3 |
| PED | | Physical Education | 1 |
| | | Elective-General Core | 3 |
| | | | 16 |

THIRD SEMESTER

| | | | Credits |
|---|---|---|---|
| SOC | 231 | Marriage and the Family | 3 |
| MTH | 201 | Elementary Statistics | 3 |
| PSY | 203 | Developmental Psychology | 3 |
| PED | | Physical Education | 1 |
| | | Elective-Humanities | 3 |
| | | Elective-Natural Science | 3-4 |
| | | | 16-17 |

FOURTH SEMESTER

| | | | Credits |
|---|---|---|---|
| SOC | 241 | Urban Sociology | |
| | | or | 3 |
| SOC | 242 | Criminology | |
| ECO | 201 | Principles of Economics | 3 |
| PED | | Physical Education | 1 |
| | | Internship Option or Elective-Social Science | 3 |
| | | Elective-General Core | 3 |
| | | Elective-Natural Science | 3-4 |
| | | | 16-17 |

### INDIVIDUAL STUDIES PROGRAM

Individual Studies is the most flexible program offered by the College. It is designed for the student who wants to explore a number of careers — people interested in personal enrichment — someone who wants to prepare for a very specialized career — anyone whose educational goals are not met by the College's other programs. Cooperative education options are available to students enrolled in Individual Studies.

#### OBJECTIVES

Upon completion of the Individual Studies Program the student will have developed one or more of the following:

1. awareness of his/her academic and manual abilities and careers in which they can be applied.
2. extensive knowledge of one or more subjects.
3. technical skills in one or more areas and general knowledge in desired academic subjects.
4. entry-level job skills in a paraprofessional or technical field.
5. completion of courses required for the four-year program into which he/she intends to transfer.

#### GRADUATION REQUIREMENTS

1. Successfully complete the College's graduation requirements for all Associate Degree Programs. (See pg. 125.)
2. Successfully complete a minimum of sixty (60) credits of Associate Degree level course work:
   a. The 60 credit hours must include 12 credits of General Education Core courses (see page 73 for a list of General Education Core course subjects) as specified below:

| | |
|---|---|
| Communications | 6 credits |
| Mathematics or Statistics | 3 credits |
| Humanities OR Social Sciences OR Natural Sciences | 3-4 credits |

   b. Full-time students must complete four additional credits of Physical Education, bringing the total number of required credits to 64; part-time students may be exempted from this requirement.
3. Complete all placement testing required by the College. Students must demonstrate basic mastery of English, reading, and mathematics through placement testing or through successful completion of appropriate courses (Developmental Studies courses) designed to provide basic skills and competencies in these areas.
4. The student must complete a planned educational program of studies.

   *This plan should be developed by the student and his or her advisor and be filed with the appropriate Division Director prior to the completion of eighteen (18) semester hours of credit.*

# ...TRANSFER PROGRAMS

CURRICULUM POSSIBILITIES

Students in Individual Studies select courses based almost entirely on their goals. Advisors work with students in designing programs and selecting the courses which will best meet their needs. It may take longer than two years to complete courses desired because of scheduling conflicts. This is particularly true for students who schedule laboratory or shop courses which require large blocks of time.

AN EXAMPLE OF A PLANNED INDIVIDUAL STUDIES PROGRAM

A person may wish to enroll in the Individual Studies program to prepare for a particular occupational specialty. For example, someone who enjoys flower arranging and cooking might want to prepare to own and run a catering business. Courses could be selected from Food and Hospitality Management, Floriculture, Business, and related areas. One possible selection of 64 credits of course work follows:

**Food and Hospitality Management**
Quantity Food Preparation
Menu Planning & Cost Control
Purchasing, Storage & Sanitation
Hospitality Merchandising
Equipment & Layouts
Personnel Management, Work Simplification

**Floriculture**
Floral Design I
Floral Design II
Flower Shop Operation

**Business**
Principles of Business
Business Communications
Accounting I
Accounting II
Small Business Management
Business Mathematics

**Related**
Introduction to Mathematics I
English Composition I
English Composition II
Fundamentals of Chemistry
Physical Education

Another student with this same career goal might choose to emphasize another area depending on interest and prior experience. For example, someone who had prepared food for many large parties in their own home might feel quite competent in the food area and wish to emphasize business courses. The exact combination of courses in the individual studies program is decided entirely by the individual, with the help of an advisor.

# EXAM PREPARATION

## Exam Preparation

### Engineer In Training (EIT) Exam Preparation

The Engineer In Training (EIT) courses prepare students to take the EIT examination. The EIT exam is one of the requirements for becoming a registered professional engineer in the State of Pennsylvania. These courses are open to anyone who wants to prepare for the examination. Courses offered are:

| Course Title | Course Number |
|---|---|
| STATICS | EIT 201 |
| STRENGTH OF MATERIALS I | EIT 202 |
| DYNAMICS | EIT 203 |
| FLUID MECHANICS | EIT 204 |
| STRENGTH OF MATERIALS II | EIT 205 |
| ENGINEERING ECONOMICS | EIT 206 |
| ENGINEERING CHEMISTRY | EIT 207 |
| THERMODYNAMICS | EIT 208 |
| ENGINEERING PHYSICS | EIT 209 |
| ENGINEERING ELECTRONICS | EIT 210 |

The Engineer In Training courses may also be used to meet requirements for the Technology Studies degree (see page 68 for more information on Technology Studies).

## Real Estate

All real estate courses offered by the Business and Computer Science Division are listed below. The list also shows the courses which can be applied to the State Real Estate Commission's requirements for a salesperson's license or a broker's license.

| Course Title | Course No. | Cr. | License for Salesperson | Broker |
|---|---|---|---|---|
| Real Estate Fundamentals | RES 112 | 3 | X | X |
| Real Estate Law | RES 113 | 3 | | X |
| Real Estate Appraisal | RES 114 | | | X |
| Real Estate Practice | RES 115 | 3 | X | X |
| Real Estate Financing | RES 116 | 3 | | X |
| Real Estate Management | RES 117 | 3 | | X |
| Real Estate Principles | RES 212 | 3 | | X |
| Real Estate Math | RES 119 | 3 | | X |
| Real Estate Taxes | RES 120 | 3 | | X |

All prospective real estate salespersons are required to take two (2) standardized real estate courses to qualify for the salesperson's examination. These courses are "Real Estate Fundamentals" and "Real Estate Practice".

To qualify to take the test for a broker's license students need 16 credits in real estate.

## LEWISBURG FEDERAL PENITENTIARY

### Heating and Air Conditioning (HA)
### Special Certificate Program
### Lewisburg Federal Penitentiary

The Heating and Air Conditioning program will instruct students in the skills necessary to design, install, and repair any type of residential or light commercial heating and air conditioning system.

**Types of Jobs:** Heating and air conditioning technician; service and repair person; equipment sales; owner and operator of business.

FALL SEMESTER

| | | | Credits |
|---|---|---|---|
| HAC | 711 | Heating and Air Conditioning I | 22 |
| MTH | 710 | Technical Mathematics I | 3 |
| | | | 25 |

SPRING SEMESTER

| | | | Credits |
|---|---|---|---|
| HAC | 721 | Heating and Air Conditioning II | 22 |
| ENL | 711 | Communications | 3 |
| | | | 25 |

SUMMER SEMESTER

| | | | Credits |
|---|---|---|---|
| HAC | 731 | Heating and Air Conditioning III | 22 |
| | | | 22 |

PROGRAM OBJECTIVES

The graduate of the Heating and Air Conditioning program should be able to:

1. service and repair all types of air conditioning and heating systems.
2. troubleshoot, identify, and correct problems in heating and air conditioning systems.
3. install complete residential or light commercial heating and/or air conditioning systems.
4. perform necessary repairs to heat pumps and solar equipment.
5. design and prepare heating and cooling load calculations, and properly select required equipment for installation.
6. use elementary math operations (addition, subtraction, multiplication, division) including decimals, fractions, and conversions as they apply to heating and air conditioning.
7. write technical reports, repair orders, estimates, purchase orders, and clear, concise business letters. Maintain inventory, service records, and customer files.
8. demonstrate an attitude of responsibility toward installation, service, and repair of heating and air conditioning systems and a desire to enter the world of work.

### Small Engine Repair (SE)
### Special Certificate Program
### Lewisburg Federal Penitentiary

The goal of this program is to prepare students for successful careers as small engine mechanics for lawn mower, marine, or snowmobile dealerships, or for self-operated businesses.

**Types of Jobs:** Small engine mechanic, shop management, factory training advisor, sales, owner/operator of repair shop.

COURSES

| | | | Credits |
|---|---|---|---|
| SER | 711 | Small Engine Repair | 14 |
| ENL | 711 | Communications | 3 |
| MTH | 710 | Technical Mathematics I | 3 |
| | | | 20 |

PROGRAM OBJECTIVES

The graduate of the Small Engine Repair program should be able to:

1. write clear, concise, legible, and accurate repair orders, estimates, memos, reports, resumes, and letters of application.
2. maintain service records and customer files.
3. identify the problems of a small engine repair shop, equipment, tools, and customer relations.
4. diagnose common small engine problems and make necessary repairs.
5. disassemble and reassemble various makes of small engines.
6. use elementary math operations (addition, subtraction, multiplication, division), including decimals, fractions, and conversions as they apply to small engine repair.
7. demonstrate an attitude of responsibility toward small engine repair and the world of work.

# COURSES

## COURSE DESCRIPTIONS

Courses are listed alphabetically under the name of the subject – Accounting, Advertising, Advertising Art, Agribusiness, Architectural Technology, Automotive, Aviation, Biology, etc.

The letters and numbers preceding the names of the courses are an identification code for recording purposes. Courses are designated by numbers as follows:

| Courses Numbered | Description |
|---|---|
| 001 - 099 | Developmental courses which may be required of students on the basis of placement tests. The College awards institutional credit for these courses. This credit will appear on the student's transcript and count in the Cumulative Grade Point Average. However, credits earned in courses numbered 001-099 may not replace any courses or electives required in a given program. |
| 100 - 299 | College-level courses applicable to Associate Degree programs. |
| 500 - 699 | Courses are applicable to Associate Degree and Certificate programs, with the exception of the General Studies program. |
| 700 - 899 | Courses applicable to Certificate programs. |

**Credits**

The number given after the course description shows the number of credits awarded for the course. The first number in parentheses shows the number of lecture hours per week. The second number, which appears after the dash, shows the number of laboratory or shop hours per week.

**Prerequisite and Corequisite Courses**

Prerequisite and corequisite courses are listed in italics at the end of the course description. Prerequisites are courses which must be completed before the student enrolls in the course for which they are listed as prerequisites. Corequisites are courses which the student must take prior to or at the same time as the course for which they are listed as corequisites.

**SPECIAL TOPICS COURSES: (1-5 credits)**

Any course with the number "299" (for example BCS 299) is a special topics course.

**COURSE DESCRIPTION**

Special attention to particular abilities, interests of students, and particular topics. Individual guidance in advanced studies. Admission by permission of the instructor, Division Director, and Dean of Academic Affairs.

## ACCOUNTING (ACC)

ACC 112
**ACCOUNTING I**
Introduction to elementary accounting principles. Includes the procedures, terms, theories, and practical applications of proprietorship accounting. Develops the foundation of accounting principles necessary for success in advanced courses and helps prepare the student for employment in business. 3 Cr. (3-0).

ACC 121
**ELEMENTARY ACCOUNTING**
Basic course in accounting for students majoring in Secretarial Science and non-business programs. Develops those accounting practices and theories which will prepare the student for employment in, or operation of, a sole proprietor business. 3 Cr. (3-0).

ACC 122
**ACCOUNTING II**
Continues the development of accounting principles as applied to the different forms of business organization. Emphasizes corporate and partnership accounting. 3 Cr. (3-0). *Prerequisite: ACC 112 or Division permission.*

ACC 125
**INCOME TAX ACCOUNTING**
Familiarizes students with the different rules and regulations regarding Federal and Pennsylvania state income taxes. Tax deductions, credits, exemptions, rates, computation of all types of taxes, and the various forms students should be familiar with are stressed. 3 Cr. (3-0).

ACC 230
**MANAGERIAL ACCOUNTING**
Presents the analytic skills needed to make decisions based on financial information. Emphasizes the organization of data for decisions, development of sound measurements, and the use of accounting for control and evaluation of economic activity. De-emphasizes the use of financial accounting using the transaction recording process. Course assumes the student has a thorough knowledge of accounting principles and is prepared to analyze the financial summarizations. 3 Cr. (3-0). *Prerequisite: ACC 122 or Division permission.*

ACC 231
**COST ACCOUNTING**
Includes transactions of a manufacturing business, finding unit costs, finding total cost after processing, and profit through distribution. Three types of cost accounting systems will be discussed in detail: Job Cost, Process Cost, and Standard Cost. 3 Cr. (3-0). *Prerequisite: ACC 122 or Division permission.*

ACC 232
**INTERMEDIATE ACCOUNTING I**
Detailed in-depth study of financial statements and the fundamental accounting processes. Includes an examination of working capital.
3 Cr. (3-0). *Prerequisite: ACC 122 or Division permission.*

ACC 244
**INTERMEDIATE ACCOUNTING II**
Deals with noncurrant assets and liabilities, stockholders' equity, and various analytical accounting processes. Includes an in-depth study of funds statement. 3 Cr. (3-0). *Prerequisite: ACC 232 or Division permission.*

ACC 246
**AUDITING**
Offers a thorough knowledge of auditing through the application of principles and stresses adherence to auditing standards. Internal controls, the field of auditing and public accounting, audit techniques, audit work papers, verification of accounts, reporting the audit and internal auditing are discussed. 3 Cr. (3-0). *Prerequisites: ACC 112, ACC 122.*

## ADVERTISING (ADV)

ADV 101
**PRINCIPLES OF ADVERTISING**
Survey of the history of American advertising and advertising in relation to the economy. Organization and management of advertising; its place in total marketing as well as retail and national advertising; sociological aspects; creative production. 3 Cr. (3-0).

## ADVERTISING ART (ART)

ART 111
**BASIC DRAWING**
The basics of observing and perceiving objects in space. Drawing objects in various ways using a variety of techniques. 3 Cr. (1-6).

ART 121
**BASIC PAINTING**
An introduction to painting. Emphasizes color, value, form, texture. Emphasizes representational painting but experimentation is encouraged. 3 Cr. (1-6). *Prerequisites: ART 111, ART 231 or permission of the instructor.*

ART 231
**COLOR AND DESIGN**
Introduction to two dimensional design and color. Studies from nature — and the properties of color, shape, form and space — lead to the discovery of individual solutions to problems in two dimensional design. 3 Cr. (1-6).

ART 232
**LETTERING AND LAYOUT**
A study of the elements and design of layouts for advertising art. The history, anatomy and design of letters. Emphasizes the proper use of lettering in advertising. 3 Cr. (1-6).

ART 233
**INTRODUCTION TO ART**
A basic course. Emphasizes the study and understanding of the visual forms of art, painting, sculpture and architecture. Includes functions of design, techniques of execution, and basic principles concerning the visual arts. Also covers the study of major periods of art: Egyptian, Greco-Roman, Medieval, Renaissance and Baroque, nineteenth and twentieth centuries. 3 Cr. (3-0).

ART 241
**MEDIA AND TECHNIQUES**
Lecture and demonstrations are used to present the various media and techniques used in advertising art, including gouache, watercolor, wash, pastel, pen and ink, scratchboard, airbrush and art aids. 3 Cr. (1-6). *Prerequisite: Permission of instructor.*

ART 242
**ADVERTISING DESIGN**
Projects in poster design, brochures, illustration and other forms of advertising and editorial media. Includes basic techniques and processes used in preparation of advertising and graphic art for the printer. The following skills are involved: illustration, paste-up, specifying type, overlays, lettering, and layout. 3 Cr. (1-6). *Prerequisite: ART 232, Permission of instructor.*

## AGRIBUSINESS (AGB)

AGB 111
**INTRODUCTION TO AGRICULTURAL BUSINESS**
An overview of the broad field of agribusiness and specialized aspects of the field. Field trips to different types of agribusinesses and farms give students a first-hand view of the industry to help them clarify their career goals. In addition, the student will develop a planned agribusiness internship/co-op experience. 4 Cr. (3-3).

AGB 112
**SOILS, FERTILIZER, AND AGRICULTURAL CHEMICALS**
The formation of and the physical and biological properties of soil. Emphasizes soil conditions that affect crop production. Composition of fertilizer, its manufacture and use. Includes soil sampling, test report analysis, plant deficiencies, and the reactions of nutrients within plants. Types of chemicals and how to use and apply them properly. 4 Cr. (3-3).

AGB 123
**FIELD AND FORAGE CROP PRODUCTION**
A study of basic principles related to the culture and production of grain crops and forage. 3 Cr. (2-3).

AGB 124
**AGRICULTURAL FINANCING**
The principles of financing as applied to agribusiness. A look at the many sources of credit—private and governmental. Obtaining credit and its use. 3 Cr. (3-0).

AGB 125
**DAIRY PRODUCTION**
The feeding, management, breeding, milking, disease control, and housing of dairy cattle. 3 Cr. (2-3).

AGB 236
**ANIMAL PRODUCTION**
The basic practical aspects of managing livestock production. Includes beef, swine, sheep, and poultry. 4 Cr. (3-3).

AGB 237
**SPECIAL TOPICS IN AGRIBUSINESS**
Investigation and study — individually and by the class — in special topics related to the objectives of the Agribusiness program. Examples of topics: Conservation, Horticulture, and Forestry. 3 Cr. (2-3).

AGB 240
**INTERNSHIP/CO-OP**
Practical experience in a planned, supervised program of work with an agricultural business or farming enterprise. 3 Cr. 200 Hrs.

AGB 248
**FARM MANAGEMENT**
The fundamental principles of management and economics with the emphasis on farm applications. Farm records, their analysis and use in determining progress and farm planning. 3 Cr. (3-0).

AGB 249
**AGRICULTURAL SALES AND SERVICE**
An introduction to the factors involved in marketing. Includes the psychology of selling, pricing, and presenting the product. Supply and demand, new concepts in marketing, the relationship of customer service to growth. 3 Cr. (3-0).

## AIR CONDITIONING AND REFRIGERATION (ACR)

ACR 231
**THEORY AND OPERATION OF AIR CONDITIONING AND HEATING SYSTEMS**
Advanced course in the design of all air systems, air and water systems, all water systems, central and room air conditioners and heat pumps. Schematic drawings of these systems, operating conditions, pressure, temperature, etc. Instruction in the sizing of duct and correct duct design (as recommended by ASHRA). 4 Cr. (3-3). *Prerequisites: ACR 521, ACR 522.*

ACR 232
**INSTALLATION AND SERVICE PROBLEMS—AIR CONDITIONING**
Correct methods of installing air conditioning equipment; duct design and sizing to assure proper air flow; installation of duct systems. Electrical and electrical component failure, including refrigeration breakdowns. 5 Cr. (3-6). *Prerequisites: ACR 521, ACR 522. Corequisite: ACR 231.*

ACR 241
**AIR MOVEMENT AND VENTILATION**
Identification and normal applications of various types of air conditioning equipment. Methods used to take apart and reassemble evaporative coolers; exhaust fans; insulation as a thermal blanket and as soundproofing. 4 Cr. (3-3). *Prerequisite: PHS 500.*

ACR 242
**SOLAR HEAT/ENERGY CONSERVATION**
Methods of delivering heat to an area, primarily with solar heat collector panels. Methods of heat transfer in space heating and heating domestic hot water. Includes the latest scientific and research data on energy conservation. 3 Cr. (2-3).

ACR 250
**AIR CONDITIONING/REFRIGERATION WORK EXPERIENCE**
Planned, supervised work experience in the air conditioning/refrigeration field. Students must submit a written report and are evaluated by employer and coordinator. All supervision should be through the employer. 1 Cr. 80 Hrs.

ACR 511
**INTRODUCTION TO REFRIGERATION**
Lectures, demonstrations, and lab assignments introduce concepts of basic refrigeration. Emphasizes the mechanical refrigeration system — including condenser, evaporators, compressor, refrigerant control devices, refrigerants, test equipment and service techniques. 5 Cr. (3-6).

ACR 521
**COMMERCIAL REFRIGERATION SYSTEMS**
Various types of installations — includes characteristics of items to be cooled in relationship to temperature, humidity, and air circulation. Includes techniques for balancing systems, system capacity, and use of heat load charts. 4 Cr. (3-3). *Prerequisites: ACR 511, ELT 531. Corequisite: ELT 541.*

ACR 522
**INSTALLATION AND SERVICE PROBLEMS—COMMERCIAL REFRIGERATION**
Various types of installation procedures and service techniques used in commercial refrigeration. Includes piping design, codes, preventive maintenance, and system accessories. 4 Cr. (3-3). *Prerequisite: ACR 511. Corequisites: ELT 541, ACR 521.*

## ARCHITECTURAL TECHNOLOGY (ARC)

ARC 102
**BASIC ARCHITECTURAL DRAFTING**
Fundamentals of architectural drawing for woodworking technology. Use and care of drawing instruments and media. Lettering, orthographic projection principles, preliminary drawing and sketching, preparation of working drawings, exterior and interior finish work, detailing cabinet and mill work. 3 Cr. (2-3).

ARC 111
**STATICS**
The study of forces and equilibrium as related to building support columns and beams. Algebraic and graphic determination of loads, reactions, shear and moment, deflection, loading and buckling, truss design, properties of areas. 3 Cr. (3-0).

ARC 112
**ARCHITECTURAL GRAPHICS I**
Basic architectural graphic media; projection drawings, axonometrics and perspective; color and texture; introduction to the architectural model; basic vocabulary of architectural drawings; composition, space, form, value, texture, shades, shadows. 4 Cr. (1-9).

ARC 115
**WORKING DRAWINGS - RESIDENTIAL**
Laboratory practice and theory in producing residential architectural working drawings; emphasis on preparation, technique, content, thoroughness, continuity, lettering, presentation, quality. 3 Cr. (1-6).

ARC 116
**BUILDING MATERIALS I**
A study of the typical materials of building construction, their production, properties, use and performance in various combinations and methods of construction. 2 Cr. (2-0).

ARC 121
**STRUCTURES - WOOD**
Theory and design of wood and timber structures. Identification, characteristics and classifications of wood. Working stresses; design and beams, columns, joints, rafters, planks, laminated sections; timber connections, fastenings and their working properties; laminated lumber shapes. 2 Cr. (2-0).

ARC 122
**ARCHITECTURAL GRAPHICS II**
Architectural rendering in various media; black and white and color problems. Emphasis on developing techniques, style, presentation. 3 Cr. (1-6).

ARC 125
**WORKING DRAWINGS - COMMERCIAL**
Laboratory practice and theory in producing non-residential architectural working drawings. Emphasizes technique in preparing drawings, content, lettering, line quality, and presentation quality. 3 Cr. (1-6).

ARC 232
**BUILDING MATERIALS II**
Subsurface exploration and foundations. Water and damp-proofing; methods and materials for masonry construction, concrete walls, slabs. Wall, floor, and roof systems; the curtain wall; fireproofing; building codes; architectural hardware. 3 Cr. (3-0). *Prerequisite: ARC 116.*

ARC 233
**BUILDING EQUIPMENT I**
Theory and design of plumbing, heating, air conditioning, and control systems. Sources and design of water supply systems; sanitary and storm systems. Computation of plumbing, heating, and cooling loads. 3 Cr. (3-0).

ARC 236
**DESIGN STUDIO I**
Introduction to the relation of space and function to the environmental needs of people. Application of principles and methods in solving design problems. Includes identification of function, data collection, site analysis, and programming. Development of visual and graphic skills and techniques. 5 Cr. (2-9).

ARC 237
**SEMINAR IN ARCHITECTURAL HISTORY**
An overview of Western art emphasizing architecture from Egypt to contemporary international styles. The course emphasizes nineteenth and twentieth century architects and their work. 5 Cr. (5-0).

ARC 238
**STRUCTURES - STEEL**
The theory and design of structural components in steel: beams, columns, connections, joists, and trusses. A study of the factors involved in selecting a structural framing system in architecture and the use of the AISC Manual. 3 Cr. (3-0).

ARC 242
**BUILDING EQUIPMENT II**
Theory and design of electrical service distribution systems. Selection of electrical equipment, and fixtures. Electrical heating design. Theory and measurement of light and sound; vertical transportation systems; sound systems. 3 Cr. (3-0).

ARC 244
**PROFESSIONAL ADMINISTRATION AND CONTRACT DOCUMENTS**
Architectural registration, professional organization, ethics; types of architectural service. Contract law; bonds, liens; codes; insurance; bidding procedures; estimating; specification writing. Supervision and administration of construction. 3 Cr. (3-0).

ARC 246
**DESIGN STUDIO II**
Environmental systems (ventilation, etc.), their analysis and integration in the design process. The application of design theory and methods in a creative design project. The project will also involve site analysis and planning, programming and program analysis of more complex problems. 6 Cr. (2-12).

ARC 247
**STRUCTURES - CONCRETE**
The theory and design of reinforced concrete: beams, columns, slabs, footings, retaining walls. A study of structural framing systems used in reinforced concrete buildings. 3 Cr. (3-0).

## AUTOMOTIVE (ABC, AMT)

ABC 713
**BASIC AUTO BODY (8 weeks)**
Basic theory and practice in trade fundamentals; body and chassis components; sanding; masking. 7 Cr. (8-16).

ABC 714
**METAL WORK (8 weeks)**
Metal work; gas welding; metal stretching and shrinking; fasteners; riveting. 7 Cr. (8-16).

ABC 723
**AUTO BODY MAINTENANCE (8 weeks)**
Exterior and interior cleaning, water and air leaks, rattles, trim work. 7 Cr. (8-16). *Prerequisites: ABC 713, ABC 714.*

ABC 724
**PANEL ALIGNMENT (8 weeks)**
Panel alignment; front and rear suspension alignment, frame alignment. 7 Cr. (8-16). *Prerequisite: ABC 723.*

ABC 833
**METAL WORK AND FILLING (8 weeks)**
Straightening metal, panel fabrication, panel replacement; use of fillers. 7 Cr. (8-16). *Prerequisites: ABC 713, ABC 714, ABC 723, ABC 724.*

ABC 834
**PAINTING (8 weeks)**
Surface preparation, paint application, paint problems, paint equipment. 7 Cr. (8-16). *Prerequisite: ABC 833.*

ABC 843
**TOOLS, EQUIPMENT AND COLLISION REPAIRS (8 weeks)**
Frame gauges, frame clamps, hydraulic equipment, hand tools and power tools. 7 Cr. (8-16). *Prerequisites: ABC 713, ABC 714, ABC 723, ABC 724, ABC 833, ABC 834.*

ABC 844
**PAINTING AND ESTIMATING (8 weeks)**
Collision damage, damage appraisal, repair procedures and techniques. 7 Cr. (8-16). *Prerequisite: ABC 843.*

AMT 510
**PRINCIPLES OF ENGINE SYSTEMS I (8 weeks)**
Operating principles of internal combustion engines. Gasoline and diesel engines, including two and four stroke cycle principles and precision measuring tools. Engine systems covered include: fuel, emission control, lubrication, compression, cooling, valve, and exhaust. Introduction to ignition. System troubleshooting emphasizing advanced fuel system components and emission controls. Fundamentals of fuel injection. Preparation for external engine repairs and tune-up work. 6 Cr. (7-15).

AMT 511
**PRINCIPLES OF ENGINE SYSTEMS II (8 weeks)**
Fundamentals of electricity and magnetism. Ohm's Law and electron theory. Operating principles of engine electrical systems including: charging, cranking, ignition, instrument and computer controls. Fuel and emission control theory and the effects of ignition systems on engine performance. System analysis emphasizing electrical systems. Prepares students for engine tune-up and/or performance analysis work, including engine electrical repairs. 6 Cr. (7-15).

AMT 520
**PRINCIPLES OF CHASSIS SYSTEMS (8 weeks)**
Fundamentals of automotive hydraulics. Theory and basic service techniques in brake systems, steering, suspension, and chassis electrical systems. Wheel balancing, use of brake lathe, tire service methods, introduction to wheel alignment. 6 Cr. (7-15).

AMT 521
**PRINCIPLES OF POWER TRAIN AND ACCESSORIES (8 weeks)**
Theory and basic service techniques in standard transmissions, clutches, U-joints, C-V joints, drive shafts, axles, transaxles, and differentials. Introduction to air conditioning, heating and selected accessory systems. Overview of automatic transmission operation. 6 Cr. (7-15).

AMT 630
**POWER TRAIN AND ACCESSORY SERVICE (8 weeks)**
Procedures, techniques and special tools for service and repair of common standard transmissions, transaxles, differentials, U-joints and other selected power train components. Repair of air conditioners, window regulators, and other selected accessories. Introduction to Automatic Transmission Service. 6 Cr. (6-18). *Prerequisite: AMT 521.*

AMT 631
**ENGINE SYSTEM SERVICE (8 weeks)**
Procedures, techniques and test instruments used for tune-up, minor engine repairs, servicing emission controls, engine electrical repairs, and general under the hood service. Use of oscilloscope, electrical meters, and chassis dynamometer for problem diagnosis. 6 Cr. (6-18).
*Prerequisites: AMT 510 and AMT 511.*

AMT 640
**CHASSIS SYSTEMS SERVICE (8 weeks)**
Procedures, techniques, and special tools used for common repairs of brakes, suspension, exhaust and chassis electrical systems. Wheel balancing and tire service. Steering repairs. Introduction to Wheel Alignment Service. Study of State Inspection Safety Code. Emphasis on State Inspection Repairs. 6 Cr. (6-18). *Prerequisite: AMT 520.*

AMT 641
**AUTOMATIC TRANSMISSION AND AIR CONDITIONING SERVICE (8 weeks)**
Procedures, techniques and special tools for service and repair of automatic transmissions and air conditioning systems. Use of pressure gauges for trouble diagnosis. Use of automatic transmission test bench. Repair of selected special power train components. 6 Cr. (6-18).
*Prerequisite: AMT 630 or Division permission.*

AMT 642
**ENGINE AND ELECTRICAL OVERHAUL (8 weeks)**
Procedures and techniques for engine overhaul. Includes valve and head work. Repair of selected electrical units including starters, alternators, and distributors. Troubleshooting engine problems using special equipment including the oscilloscope, chassis dynamometer, electrical meters, and infra-red exhaust gas analyzer. Advanced fuel system service and adjustments. Includes gasoline and fuel injection on selected systems. 6 Cr. (6-18). *Prerequisite: AMT 511 or Division permission.*

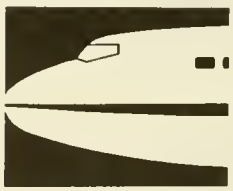
AMT 643
**WHEEL ALIGNMENT AND ADVANCED CHASSIS SERVICE (8 weeks)**
Methods of wheel alignment and balance. Use of various types of alignment racks and instruments. Experience in diagnosing steering, alignment, and suspension problems. Procedures for overhauling power steering units. Repair or replacement of selected special steering and suspension components. 6 Cr. (6-18). *Prerequisite: AMT 520 or Division permission.*

## AVIATION (APC)

Lecture and lab hours shown are for an entire semester.

APC 512
**TURBINE ENGINES**
Theory and operating principles of aircraft gas turbine engines and the function of the engine components. 3 Cr. (35-45). *Prerequisites: APC 513, APC 514, APC 515, APC 516. Corequisites: APC 517, MTH 515.*

APC 513
**BASIC ELECTRICITY**
Basic electrical theory as it applies to Ohm's Law. Application of AC-DC circuits. Use of electrical measuring instruments and diagrams. Principles of aircraft electrical components and power systems. 3 Cr. (45-33).



APC 514
**FEDERAL AIR REGULATIONS, RECORDS, AND PUBLICATIONS**
Federal aviation regulations under parts 43, 65, and 145 as they apply to the privileges and limitations of the mechanic. The use of aircraft maintenance publications, records, and forms. 2 Cr. (24-17).

APC 515
**MATERIAL AND PROCESSES**
An introduction to precision measurement equipment. Identification and selection of aircraft hardware and materials. The process of heat treating and inspecting materials by visual and non-destructive test methods. 3 Cr. (38-38).

APC 516
**AIRCRAFT SERVICING/FLUIDLINERS AND FITTINGS**
Identification of aircraft fuel and lubricants, ground operations movement, security and safety precautions necessary with aircraft. Includes the secretion and use of cleaning materials, and procedures for corrosion control. The fabrication and installation of rigid and flexible fluid liners and fittings. 3 Cr. (31-56).

APC 517
**WEIGHT AND BALANCE/PHYSICS**
The procedure for weighing aircraft, computing the various weights for proper balance and recording this data. Physics topics include the principles of simple machines, fluid and heat. 2 Cr. (21-25).

APC 522
**ENGINE IGNITION SYSTEMS**
The inspection, service, troubleshooting, repair and theory of reciprocating and turbine engine ignition systems. Includes various related components. 3 Cr. (30-39). *Prerequisites: APC 513, APC 514, APC 515, APC 516, APC 517, MTH 515. Corequisite: EDT 104.*

APC 523
**ENGINE INDUCTION AND EXHAUST SYSTEMS**
Covers engine induction, ice and rain control, heat exchanges, superchargers, and turbo chargers, and air intake and induction manifolds. Includes the theory, inspection, troubleshooting and repair of these components. Engine exhaust systems and their components are covered. 2 Cr. (16-26). *Prerequisites: APC 513, APC 514, APC 515, APC 516, APC 517, MTH 515. Corequisite: EDT 104.*

APC 524
**ENGINE FUEL SYSTEMS**
Engine fuel systems including the inspection, service, troubleshooting, and repair of engine fuel pumps and related components. Also covers reciprocating and turbine engine fuel metering systems. 3 Cr. (28-40). *Prerequisites: APC 513, APC 514, APC 515, APC 516, APC 517, MTH 515. Corequisite: EDT 104.*

APC 525
**PROPELLERS**
Theory, operating principles and maintenance practices for fixed pitch and constant speed propellers. Also covers propeller governing and synchronizing system, ICR control, and their related functions. 3 Cr. (38-47). *Prerequisites: APC 513, APC 514, APC 515, APC 516, APC 517, MTH 515. Corequisite: EDT 104.*

APC 526
**RECIPROCATING ENGINES AND ENGINE INSPECTION**
Reciprocating engines including operating principles, nomenclature and inspection of parts and overhaul. The installation and adjustment of magnetos, fuel metering components, propeller and other components necessary for the operation of the engine. Inspection necessary for the safe operation of the engine. 7 Cr. (64-152). *Prerequisites: APC 513, APC 514, APC 515, APC 516, APC 517, MTH 515. Corequisite: EDT 104.*

APC 633
**ENGINE COOLING AND LUBRICATING**
Details the inspection, service and repair of engine cooling and lubricating systems and components. 4 Cr. (44-39). *Prerequisites: APC 513, APC 514, APC 515, APC 516, APC 517, MTH 515, EDT 104.*

APC 634
**ENGINE FIRE PROTECTION AND INSTRUMENTS**
Operating principles and service of airframe fire warning and extinguishing systems and smoke and carbon monoxide detection systems. Installation, operation, repair of airframe instrument systems. 2 Cr. (31-19). *Prerequisites: APC 513, APC 514, APC 515, APC 516, APC 517, MTH 515, EDT 104.*

APC 635
**ENGINE ELECTRICAL**
The operation, installation and repair of engine electrical components. Includes wiring, controls, switches, protective devices, generating and starting units. 3 Cr. (44-34). *Prerequisites: APC 513, APC 514, APC 515, APC 516, APC 517, MTH 515, EDT 104.*

APC 636
**AIRCRAFT ELECTRICAL**
Study and repair of airframe electrical circuits and components. Includes wiring, controls, switches, protective devices, lighting systems. AC/DC circuits and related electrical accessories. 4 Cr. (46-30). *Prerequisites: APC 513, APC 514, APC 515, APC 516, APC 517, MTH 515, EDT 104.*

APC 637
**AIRCRAFT COVERING, FINISHES AND WELDING**
The use of various fabrics in the construction of aircraft and the application of paints and dope. The theory and practice of welding and welding methods, and the safe use of welding equipment. 3 Cr. (34-56). *Prerequisites: APC 513, APC 514, APC 515, APC 516, APC 517, MTH 515, EDT 104.*

APC 638
**AIRCRAFT ASSEMBLY AND RIGGING/INSPECTION**
The theory of flight including fixed wing aircraft and helicopter. Includes assembly of aircraft, installation and rigging controls and surfaces, balancing movable surfaces and alignment checks. Performance of airframe airworthiness inspections and conformity. 3 Cr. (28-56). *Prerequisites: APC 513, APC 514, APC 515, APC 516, APC 517, MTH 515, EDT 104.*

APC 642
**AIRCRAFT SHEET METAL AND WOOD STRUCTURE**
Details methods for the use of rivets, fasteners, and metal working processes used in construction and repair of aircraft. Includes the inspection and repair of plastics, honey comb, and laminated structure. Also covers wood identification, inspection and repair. 6 Cr. (58-104). *Prerequisites: APC 513, APC 514, APC 515, APC 516, APC 517, MTH 515, EDT 104.*

APC 643
**AIRCRAFT LANDING GEAR, HYDRAULICS, PNEUMATICS AND POSITION WARNING**
The inspection, operation, service and repair of aircraft landing gears, hydraulics and pneumatics. Landing gears including retraction systems, shock struts, brakes, wheels, tires and steering systems. Hydraulics and pneumatics including power and control systems, pumps, actuators, and special equipment. Position and warning systems including speed and take-off, anti-skid, and landing gear position units. 6 Cr. (74-88). *Prerequisites: APC 513, APC 514, APC 515, APC 516, APC 517, MTH 515, EDT 104.*

APC 644
**AIRCRAFT COMMUNICATIONS, NAVIGATION AND INSTRUMENTS**
Inspection, checks, and service of auto pilot, approach control, communication, and navigation systems as well as antennas. Includes the installation, inspection and service of aircraft instruments and their systems. 2 Cr. (30-22). *Prerequisites: APC 513, APC 514, APC 515, APC 516, APC 517, MTH 515, EDT 104.*

APC 645
**AIRCRAFT ATMOSPHERE CONTROL AND ICE/RAIN CONTROL**
The various types of atmosphere control systems. Includes pressurization, heating, cooling, and ventilation as well as oxygen systems. Also covers the various pneumatic and electrical operated ICR and rain control systems. 3 Cr. (37-15). *Prerequisites: APC 513, APC 514, APC 515, APC 516, APC 517, MTH 515, EDT 104.*

## BIOLOGY (BIO)

BIO 110
**APPLIED HUMAN PHYSIOLOGY**
Study of human physiology and anatomy. Includes cells, tissues, and tumors, and digestive, excretory, cardiovascular, and endocrine systems. Other body systems as time permits. Diseases and immunology. 3 Cr. (3-0).

BIO 111
**BASIC BOTANY (HORTICULTURE)**
Fundamentals of plant science, plant anatomy, physiology, taxonomy, reproduction, and genetics. 3 Cr. (2-3).

BIO 113
**GENERAL BIOLOGY I**
Fundamental processes of living organisms. Main concepts of biology — beginning with considerations of the chemical basis of life. Structure, function, and evolution of cells. 4 Cr. (3-3).

BIO 115
**HUMAN ANATOMY AND PHYSIOLOGY I**
A medically oriented study of the structure and function of the human body. For students specializing in nursing, medical technology, and biology. Lecture and laboratory. 4 Cr. (3-3).

BIO 121
**BASIC ANATOMY AND PHYSIOLOGY**
Human anatomy and physiology; cells, tissues, and tumors; nervous, excretory, reproductive and endocrine systems; diseases; principles of chemistry; microbiology; and physics. For students who need a basic background in anatomy and physiology (e.g., Secretarial Science—Medical). 3 Cr. (3-0).

BIO 123
**GENERAL BIOLOGY II**
Continuation of BIO 113. Structure, function, interrelationships, and evolution of organisms. 4 Cr. (3-3). *Prerequisite: BIO 113 or permission of the instructor.*

BIO 125
**HUMAN ANATOMY AND PHYSIOLOGY II**
Continuation of BIO 115. 4 Cr. (3-3). *Prerequisite: BIO 115.*

BIO 201
**MICROBIOLOGY**
Biology of microorganisms. Includes bacteria, rickettsiae, viruses, fungi, protozoa, and helminths. Relationship between microorganisms and higher forms of life. 4 Cr. (3-3). *Prerequisite: BIO 123.*

BIO 203
**GENERAL BOTANY**
Introduction to plant physiology, plant life cycles, and plant taxonomy. 4 Cr. (3-3). *Prerequisite: BIO 123.*

BIO 208
**ECOLOGY**
Basic principles of the relationships between plants and animals and their environments. Physical factors, energy and chemical cycles in the ecosystem, population and community characteristics, ecological succession, aquatic and terrestrial ecology. Local terrestrial and aquatic environments. 4 Cr. (3-3). *Prerequisite: One semester of college level biology.*

BIO 290
**SPECIAL STUDIES IN BIOLOGY**
Special attention to particular abilities and interests of students. Individual guidance in advanced studies. Admission by permission of the instructor. (1-3, laboratory as required).

## BROADCASTING (BRC)

BRC 110
**INTRODUCTION TO BROADCASTING**
In-depth study of the broadcast industry, its personnel, history, current status and future. The student will explore his/her own interests in broadcasting through brief experiences in the work done in various broadcast station positions. 3 Cr. (3-0).

BRC 115
**TECHNICAL COMMERCIAL RADIO OPERATION**
A broad survey of basic electronic theory prepares the student to understand the functions of broadcasting equipment. Equipment is demonstrated. Legal responsibilities — as defined by the FCC — relating to equipment operation are explained. 3 Cr. (3-0).

BRC 123
**NEWS WRITING FOR RADIO**
Fundamentals of English grammar are reviewed. News gathering and writing are practiced. The unique requirements of electronic news writing are demonstrated and practiced. 3 Cr. (3-0).

BRC 125
**INTRODUCTION TO RADIO STATION OPERATION**
The student will operate the College's radio station. He/she must announce and may also do other jobs — for example, business or administrative work. 3 Cr. (1-6).

BRC 233
**ANNOUNCING TECHNIQUES**
Human communication is examined. American General Speech is demonstrated and practiced. Forms of announcing — general, news, commercial, sports, interviewing, music and talk show — are evaluated and practiced. 3 Cr. (3-0).

BRC 235
**RADIO STATION OPERATION AND MANAGEMENT**
Continuation of BRC 125. Hands-on operation of College station by students. Experience emphasizes practice in business, sales, production and administration. Students refine their announcing techniques. 3 Cr. (1-6). *Prerequisite: BRC 125.*

BRC 241
**SURVEY OF RADIO INDUSTRY**
The course examines the development of radio practices and regulations. Legal issues and government regulations are emphasized. Students examine ethical aspects of radio practices and regulation. 2 Cr. (2-0).

BRC 242
**COMMUNITY ASPECTS OF BROADCASTING**
The student designs a broadcast facility based on demographic information he/she acquires and evaluates. The student learns to analyze community standards as a guide in programming and for the public service base required by the FCC. The business aspects of broadcasting (sales, management and promotion) are also emphasized. 3 Cr. (3-0).

## BUSINESS MANAGEMENT (MGT)

MGT 110
**PRINCIPLES OF BUSINESS**
Introduction to the various types of business organizations, from a legal as well as administrative viewpoint. Emphasizes terminology as applied in such fields as economics, finance, marketing, and business law. Includes basic concepts of management — from the establishment of objectives through planning, organizing, policy formulation, taking action, measuring and evaluating, and performance improvement. 3 Cr. (3-0).

MGT 111
**BUSINESS MATHEMATICS**
Fundamentals of mathematics as applied in addition, subtraction, multiplication, and division. The use of percent, interest, depreciation and installment buying in the modern business world. 3 Cr. (3-0).

MGT 125
**FINANCE**
Includes valuation principles, risk assessment, analysis of financial statements, working capital management, alternate financing strategies, capital budgeting, optimum financial decision making, and analysis involving the cost of capital. Includes the analysis of current market trends and projections. 3 Cr. (3-0). *Prerequisites: ACC 112, ACC 122 or Division permission.*

MGT 230
**BUSINESS COMMUNICATIONS**
Application of communication skills: listening, reading, writing, and speaking accurately, briefly, and clearly. Students are trained to write all types of business communications. Includes the techniques of personal and interpersonal relations to prepare the student to perform well and to advance in a career. 3 Cr. (3-0).

MGT 231
**BUSINESS LAW I**
Introduction to the judicial process, the social implications of law, the roles of government and labor unions in the formulation of business laws. In-depth study of rights and obligations as they apply to contract law. 3 Cr. (3-0).

MGT 235
**BUSINESS PSYCHOLOGY**
Psychological principles as applied in modern business. Encourages the proper attitudes toward work and people. Gives the student an awareness of human relations skills needed to be an efficient employee and an effective leader, both on and off the job. 3 Cr. (3-0).

MGT 237
**BANKING AND INVESTMENTS**
Introduction to banking and investments. Explains how institutions can best meet the needs of society. Provides a foundation for understanding how banks operate today, and why and how they have evolved to their present state. 3 Cr. (3-0).

MGT 238
**INSURANCE**
Structure and practices of the insurance field. The uses of various types of insurance policies and their importance for personal and business success are stressed. 3 Cr. (3-0).

MGT 241
**BUSINESS LAW II**
Based on the objectives of Business Law I. Provides an in-depth study of the laws of agency and employment relations, commercial paper, personal property, bailments, and sales. 3 Cr. (3-0). *Prerequisite: MGT 231.*

MGT 247
**SMALL BUSINESS MANAGEMENT**
Introduction to the problems of owning and operating a business of one's own. Necessary personal characteristics, problems involved in buying and initiating a new business, and the activities of management are covered. 3 Cr. (3-0).

MGT 248
**SUPERVISION AND HUMAN RELATIONS**
Duties and responsibilities of the first-line supervisor and manager who holds up to a middle-level management position are studied from a behavioral point of view and in relation to how he/she influences others to accomplish organizational goals. Includes motivation, job enrichment, rules of leadership, and interpersonal relationships. 3 Cr. (3-0). *Prerequisite: MGT 110 or Division permission.*

## CARPENTRY (BCT, CNC)

BCT 111
**WOODWORKING FOR CARPENTERS**
Basic principles and skills used in hand and machine woodworking operations; special projects. 4 Cr. (2-6).

BCT 112
**CONSTRUCTION CARPENTRY**
Basic principles of frame construction: foundations and concrete formwork, types of building frames, strength of beams and girders, structural sheathing and house details. Ideas and trends in construction methods and techniques. 4 Cr. (2-6).

BCT 121
**ESTIMATING AND BLUEPRINTS**
Introduction — types of drawings. Lines, marks, symbols, conventions, scales, dimensions; material quantities and cost estimating. 2 Cr. (2-0).

BCT 122
**BLOCK CONSTRUCTION**
Block laying skills in lab; practical work. Classroom instruction covers materials, types and sizes of blocks, principles of cost estimation. 6 Cr. (2-12).

BCT 231
**ROOF-FRAMING THEORY**
Principles of rafter layout, use of framing square, problems of roof framing and construction, types of roofs and rafters. 3 Cr. (3-0).

BCT 232
**BRICK CONSTRUCTION**
Laying various patterns of brick to meet industrial standards with speed and accuracy; following architect's drawings; chimney, fireplace and wall projects. 5 Cr. (2-9).

BCT 241
**ADVANCED CARPENTRY**
Advanced woodworking techniques and fundamentals of finished carpentry. Modern finishing materials and methods used to apply finishing materials; exterior and interior trim. Millwork, cornice work, roofing, siding, frame for openings, interior wall and ceiling material; trim and moldings; built-in cabinet work; stairbuilding. School sponsored construction work. 4 Cr. (2-6).

BCT 242
**BUILDING CONSTRUCTION TECHNOLOGY**
Advanced technical aspects of building construction and solution of practical construction problems. Special advanced projects, campus construction work including house construction projects. 6 Cr. (3-9).

BCT 243
**CONCRETE CONSTRUCTION**
Principles of concrete design — water-cement ratio, proportions of ingredients, reinforced concrete, concrete footers and walls, finishing with hand and power trowel equipment, proper methods of curing and testing concrete. 3 Cr. (2-3).

CNC 711
**SURVEYING, LAYOUT & BLUEPRINT READING (8 weeks)**
Interpretation of building codes, specifications, and blueprints; types and erection of batter boards. Use, care and operation of builder's level, simple surveys, 3-4-5 triangle calculations. Determination of depth of excavation. 2 Cr. (3-3).

CNC 712
**CONCRETE AND BLOCK (8 weeks)**
Study and application of methods and materials used in laying out and building block and concrete walls. Principles used in forming, pouring and finishing concrete footings, reinforced concrete and concrete slabs. Introduction to appropriate tools and instruction in their proper use and care. 4 Cr. (3-16).

CNC 713
**BRICK AND STONE (8 weeks)**
Study of brick and stone products currently used in construction work. Emphasizes common methods. Students work on shop projects and, when possible, on permanent projects outside the shop. 6 Cr. (6-19).

CNC 721
**FRAMING AND SHEATHING (8 weeks)**
Principles and applications of framing and sheathing. Shop projects and outside projects. Emphasizes new and traditional materials used in this phase of construction. 6 Cr. (6-19).

CNC 722
**EXTERIOR FINISH (8 weeks)**
Develops skills in the selection and use of siding and roofing materials. Experience in door and window framing, exterior trim, cornice work, insulation materials and methods. 6 Cr. (6-19).

CNC 831
**INTERIOR FINISH (8 weeks)**
Instruction in the selection and application of materials used for interior walls, ceilings and floors. Students use these materials, and the tools associated with them, in shop and permanent installations. 6 Cr. (6-16).

CNC 832
**INTERIOR TRIM (8 weeks)**
Includes door hanging, moldings and trim, built-in features, stair building and kitchen cabinets. Offers the student a broad background in interior trim and, when possible, provides experience in the use of the methods and materials studied. 6 Cr. (6-16).

CNC 833
**BLUEPRINTS AND SPECIFICATIONS**
Techniques in reading and interpreting blueprints and specifications. Instruction in reading plan views, elevations, and details typical of working drawings. Reviews the math principles needed to understand and use these drawings. Stresses specifications and their relationship to working drawings. 3 Cr. (3-0). *Prerequisites: CNC 712, CNC 713, CNC 721, CNC 722.*

CNC 841
**SPECIALTY AND RELATED TRADES (8 weeks)**
Surveys specialty and related trade areas — from wall and floor coverings through fundamental electrical wiring and plumbing and heating. Instruction and practical experience. 4 Cr. (3-16).

CNC 842
**PRACTICAL CONSTRUCTION EXPERIENCE (8 weeks)**
Use of the knowledge and skills acquired in the construction curriculum. Supervised permanent projects on and around campus. When practical, the student participates in all stages of a project — from planning through construction. 4 Cr. (1-18).

CNC 843
**BUILDING TRADES ESTIMATING (8 weeks)**
Study of processes and procedures gives working knowledge of various trades. Students learn how to figure realistic construction costs for completed projects. Includes both residential and commercial estimating and emphasizes types of estimates and quantity take-offs. 3 Cr. (6-0). *Prerequisite: CNC 833.*

CNC 844
**PERSONAL AND JOB ORIENTATION (8 weeks)**
Introduction to practical techniques for self-evaluation. Stresses the importance of values, interests, personality, and attitude in determining work success. Emphasizes establishing realistic work goals and expectations based on the student's self-knowledge. Surveys problems the beginning worker faces preparing to take his/her place in the world of work. Methods and techniques of gaining and maintaining employment are discussed in detail. 3 Cr. (6-0).

## CHEMISTRY (CHM)

CHM 100
**FUNDAMENTALS OF CHEMISTRY**
Introduction to basic concepts of inorganic and organic chemistry. Essentially non-mathematical. For students who have never had chemistry or whose background is very weak. Prepares students for CHM 105 or CHM 111. 4 Cr. (3-3).

CHM 105
**GENERAL ORGANIC CHEMISTRY**
Introduction to the major classes of organic compounds. Includes brief review of some inorganic concepts in relation to organic reactions. For non-science students who need to fulfill a lab science requirement and for science students as an introduction to CHM 203. 4 Cr. (3-3). *Prerequisites: High school chemistry or permission of the instructor.*

CHM 107
**GENERAL ORGANIC CHEMISTRY**
Introduction to the major classes of organic compounds. Includes brief review of some inorganic concepts in relation to organic reactions. 3 Cr. (3-0). Cannot be used to satisfy lab science requirements. *Prerequisites: High school chemistry or permission of the instructor.*

CHM 111
**GENERAL CHEMISTRY I**
Principles of modern chemistry. Emphasizes inorganic aspects. For science majors and non-science students who need to fulfill a lab science requirement. Prepares students for CHM 121 or CHM 203. 4 Cr. (3-3). *Prerequisites: High school algebra or equivalent; high school chemistry desirable but not required.*

CHM 121
**GENERAL CHEMISTRY II**
Continuation of CHM 111. For science majors and non-science students who need to fulfill a lab science requirement — the latter may elect CHM 105 instead of CHM 121. 4 Cr. (3-3). *Prerequisites: CHM 111 or high school chemistry with permission of the instructor.*

CHM 203
**ORGANIC CHEMISTRY I**
The major classes of organic compounds. Emphasizes molecular structure and reaction mechanisms. Intended for science majors. 4 Cr. (3-3). *Prerequisites: CHM 105 or CHM 111, or high school chemistry with permission of the instructor.*

CHM 204
**ORGANIC CHEMISTRY II**
Continuation of CHM 203. 4 Cr. (3-3). *Prerequisites: CHM 203 or equivalent.*

CHM 290
**SPECIAL TOPICS IN CHEMISTRY**
A flexible course to meet special needs or interests of science or non-science students. Lectures may be supplemented with lab work as needed. 1 to 4 Cr. *Prerequisite: Permission of the instructor.*

## CIVIL ENGINEERING TECHNOLOGY (CET)

CET 111
**MATERIALS OF CONSTRUCTION**
Properties of concrete, aggregates, asphalt, steel, wood, plastics, clay products and miscellaneous construction materials. Methods of testing and sampling construction materials. Applying knowledge of and data on materials in designing structures. 2 Cr. (2-0).

CET 112
**ENGINEERING DRAWING**
Use of engineering drawing instruments; lettering; geometric constructions; orthographic projection; dimensioning; sketching. Architectural drawing — including plans, elevations, details, and site plans. Structural drawing including uses and detailing for wood, concrete, and steel structures. 3 Cr. (1-6).

CET 113
**INTRODUCTORY SURVEYING**
Introduction to surveying; use and care of instruments. Simple surveys with compass, transit, level and tape. Notekeeping; computations; preparing planimetric map. 2 Cr. (1-3).

CET 121
**PLANE SURVEYING**
Theory and practice of plane surveying; traverses and elementary triangulation; three-wire differential, trigonometric and reciprocal leveling; stadia and plane table surveys; adjustment of instruments; analytical geometry for surveying. 4 Cr. (1-9). *Prerequisites: CET 113, MTH 103. Corequisite: MTH 104.*

CET 122
**TOPOGRAPHIC DRAWING & CARTOGRAPHY**
Use of conventional signs in mapping. The construction of large-scale topographic maps, logical contouring, profiles, photographic and map interpretation. Methods of plotting, use and construction of small scale maps, earth's coordinate system, map projections, enlargement and reduction of maps, scribing techniques, photographic color separation, typography, thematic maps, reproduction, and processing. 3 Cr. (1-6). *Prerequisite: CET 112.*

CET 231
**ROUTE SURVEYING**
Highway curves (horizontal and vertical); field stake out cross sections; slope staking; determination of earthwork; plan and profile; profile leveling; polaris and solar observations for bearing; route location on topographic map. 4 Cr. (1-9). *Prerequisite: CET 121.*

CET 232
**ORIGIN, DISTRIBUTION & BEHAVIOR OF SOILS**
Geologic origin of soils; minerals, rocks, rock structures, weathering, glaciation, erosion and deposition. Distribution of soils in North America; residual, glacial and water-wind deposited soils. Soil characteristics and behavior; engineering classification, volume-weight relationships, physical properties, supporting capabilities for foundation elements and sampling methods. 3 Cr. (2-3). *Prerequisite: MTH 104. Corequisite: PHS 100.*

CET 233
**STATICS**
Basic principles of statics; coplanar and non-coplanar force systems; friction; centroids and moments of inertia; hydrostatic pressures and loads. 3 Cr. (3-1). *Prerequisite: MTH 104.*

CET 234
**HIGHWAY ENGINEERING TECHNOLOGY**
Highway systems, organization and planning; right-of-way; driver, vehicle and road characteristics; highway design, traffic engineering; drainage; engineering economics; pavement design; construction and maintenance. 3 Cr. (3-0).

CET 241
**ADVANCED SURVEYING**
Horizontal and vertical control surveys; triangulation and level nets; three point solution; planning and estimating from topographic maps; state plane coordinate systems, public land surveys; boundary surveys, electronic distance measurement; theodolites. 3 Cr. (2-3). *Prerequisite: CET 121.*

CET 242
**FLUID MECHANICS**
Mechanics of fluids; fluid flow in conduits and around bodies; liquid flow in open channels; friction and energy loss; fluid measurements; pumps; similitude and dimensional analysis. 3 Cr. (2-3). *Prerequisites: PHS 100, CET 233.*

CET 243
**STRENGTH OF MATERIALS**
Engineering materials and properties; stress and deformation; shear and moment in beams; stresses in beams; beam design for wood and steel; beam deflection; statically indeterminate beams; combined stresses; column design. 3 Cr. (3-0). *Prerequisite: CET 233.*

CET 244
**PHOTOGRAMMETRY**
Use and application of aerial photographs; mapping by photogrammetric methods; geometry of aerial photographs; stereoscopy; overlapping aerial photographs; aerial triangulation; flight planning; photographic principles, tilted aerial photos; cost estimation; contracts and specifications; remote sensing. 3 Cr. (2-3). *Prerequisite: CET 122.*

## COMPUTER OPERATOR (COP)

COP 713
**COMPUTER OPERATIONS I**
An introduction to the operation of equipment found in computer installations. Topics include mounting tapes and disc packs, operating CRT's, line printers, console typewriters, card readers, keypunch machines, data recorders, card sorters, other unit record devices, forms handling equipment, electronic calculators, and duplicating machines. 6 Cr. (3-9).

COP 723
**COMPUTER OPERATIONS II**
This course is designed to train the student in both the non-physical and physical aspects of data processing operations. Emphasizes software operations, the use of EDP manuals, and the actual functioning of a computer center. Other topics include computer hardware, disc and tape processing, and recovery techniques for hardware and software errors. 4 Cr. (3-3). *Prerequisite: COP 713.*

COP 724
**COMPUTER OPERATIONS INTERNSHIP**
Students are assigned to computer installations for practical experience in computer operations. The student will receive on-the-job training in the College's computer center and/or various industrial locations. 2 Cr. (0-6). *Prerequisite: COP 713.*

## COMPUTER SCIENCE (CSC)

CSC 100
**FORTRAN IV PROGRAMMING**
Concepts of data processing systems, methods and applications; programming languages and program structures; FORTRAN IV programming language problem analysis, flow-charting and computer solutions of numerical and non-numerical problems. 3 Cr. (3-0).

CSC 118
**FUNDAMENTALS OF COMPUTER SCIENCE**
Introduction to the field of computer science. Specific topics covered include communication with a computer through use of a Cathode Ray Tube, punch card equipment, records and files, concepts of computer systems, logic and problem solving techniques, flowcharts, data representation, and an overview of selected programming languages with an emphasis on BASIC Programming Language. 3 Cr. (3-0).

CSC 119
**RPG PROGRAMMING I**
Beginning course in REPORT PROGRAM GENERATOR Programming. Includes writing, compiling, and executing RPG programs. The programs written for this course will be based on business applications and business-oriented problems. 3 Cr. (3-0).

CSC 120
**BUSINESS COMPUTER APPLICATIONS**
This course emphasizes the use of the computer in typical business applications. It focuses on the use of computer-based information systems to provide information for effective management decision making. Includes data base concepts, data entry, man-machine interaction, and data retrieval concepts. 3 Cr. (3-0). *Prerequisite: CSC 118.*

CSC 127
**ASSEMBLER LANGUAGE PROGRAMMING**
A beginning course in basic assembler language. Includes such topics as data representation, instructions, coding, problem analysis, flowcharting, program writing, execution, debugging, documentation, job control and operating systems. 4 Cr. (4-0). *Prerequisite: CSC 118.*

CSC 128
**COBOL PROGRAMMING I**
Covers the COBOL computer language, language elements and division, program writing, execution, diagnostics, advanced programming concepts and techniques. Stresses documentation — including a written problem statement — any required formula development, printer spacing for chart layouts and the appropriate terminology for programming, card/tape and/or disc record layout, internal memory requirements, and a program flowchart. 3 Cr. (3-0). *Prerequisite: CSC 118.*

CSC 234
**FORTRAN AND LINEAR PROGRAMMING**
Designed to introduce the student to FORTRAN language programming as applied to business and mathematics problems. Topics include subprograms, table handling, linear programming, use of the plotter to draw graphs, and using magnetic tape and disc. 3 Cr. (3-0). *Prerequisites: CSC 118 and a programming language.*

CSC 237
**ADVANCED ASSEMBLER PROGRAMMING**
A continuation of CSC 127. Covers data manipulation; tape, disc, and floating/point operations; macro definitions and statements; analysis and programming for business and scientific applications. 3 Cr. (3-0). *Prerequisite: CSC 127.*

CSC 238
**COBOL PROGRAMMING II**
Introduction to structures used to represent the logical relationship between elements of information and to the techniques used to work with information structures using tape and disc storage. The student examines how a complex computer programming task can be subdivided for maximum clarity, efficiency, and ease of maintenance and modification. The concept of programming style permeates most of the material presented. Careful verification of program operation and documentation of programs are emphasized. 3 Cr. (3-0). *Prerequisite: CSC 128.*

CSC 241
**SYSTEMS ANALYSIS AND DESIGN**
Study in the systematic approach to the analysis, design, development and implementation of a computerized business system; system life cycle; system investigation; problem definition; input, output designs; record file designs, system structures; documentation; independent and/or team development of an assigned system problem. 4 Cr. (4-0). *Prerequisites: CSC 118 and a programming language.*

CSC 242
**BASIC LANGUAGE PROGRAMMING**
Covers the BASIC programming language in detail, adding to and developing the concepts presented in CSC 118. Detailed discussion of the BASIC language — including operating procedures of a time-sharing computer system. Interactive programming techniques will be stressed through such topics as data conversion, string functions, sequential I/O, virtual I/O, and record I/O. Programming techniques will be discussed. The course is geared to business data processing. A special project may be required. 3 Cr. (3-0). *Prerequisite: CSC 118.*

CSC 245
**COMPUTER SOFTWARE SYSTEMS**
Provides a working view of hardware/software configurations as integrated systems. Introduction to execution software, multiprogramming and operation software. Investigation of utility routines and file systems. Basic components of file and communication systems will be presented and analyzed. The functioning of these systems as integral components of an information system is stressed. 3 Cr. (3-0). *Prerequisites: CSC 118 and a programming language.*

CSC 246
**PL/1 PROGRAMMING**
Introduces the student to the PL/1 programming language as applied to business/mathematics problems, programming techniques and procedures. 3 Cr. (3-0). *Prerequisites: CSC 128 and CSC 234.*

CSC 247
**INTERNSHIP IN COMPUTER SYSTEMS**
Supervised on-the-job training or an individual research project in computer science. A faculty member from the division will either assign the student to a local industrial data processing installation for on-the-job training or help the student select a research topic. 3 Cr. (0-9). *Prerequisite: Two semesters of computer science.*

CSC 249
**RPG PROGRAMMING II**
An advanced course in REPORT PROGRAM GENERATOR programming. Includes writing, compiling, and executing programs. Programs written for this course will include such techniques as table lookup, sequential disc files, indexed-sequential disc files, and matching records. 3 Cr. (3-0). *Prerequisite: CSC 119.*

## COOPERATIVE EDUCATION (CED)

If co-op is taken in addition to the courses normally required for completion of their program of study, students will register for co-op experience using the numbers below. If co-op experience is elected in place of the course(s) within a curriculum, the student will register for the course(s) to be replaced using the course identification number followed by the letter "C". Example: ABC 833C Metal Work and Filling. This indicates that the student is seeking credit for ABC 833 through participating in a co-op experience.

CED 101
**COOPERATIVE EDUCATION I**
Designed for the associate degree or certificate student wishing to participate in a related educational work experience as an elective. The student will be placed with an approved employer in a job related to the skills and knowledge offered in his or her program. Variable 1-6 Cr.

CED 102
**COOPERATIVE EDUCATION II**
Designed for the associate degree or certificate student who has successfully completed CED 101 and wishes to participate in a second program of related educational work experience with the same or a new employer. Variable 1-6 Cr.

CED 103
**COOPERATIVE EDUCATION III**
This course is designed to assist the cooperative education student through the transition from college to the "world of work". A series of seminars emphasizes acquiring job application skills, adjusting to the work environment, and developing sound interpersonal relationships. A portion of the course will be devoted to methods of reporting the day- today and total experiences gained while on the job. CED 103 may be required for co-op students prior to the initial job placement. No credit.

## DAIRY HERD MANAGEMENT (DHM)

DHM 711
**SOILS AND SOIL FERTILITY**
Students will study the different soil types found in Pennsylvania and relate soil types to fertility, plant growth and tillage. Will include the study of fertilizers, soil test reports, chemical applications related to texture and economically maximizing production. Lab sessions will include soil testing, lime and fertilizer selection and application and conservation. 3 Cr. (2-3).

DHM 712
**FORAGE PRODUCTION**
The course emphasizes the forage program as a vital part of the dairy operation. Includes forage production and handling and the economic importance of forage to the feeding program. Crops covered include corn — for silage and grain — alfalfa, haylage and dry hay, small grains and grasses. Students will participate in field crop planning as well as equipment operation and maintenance and weed control. 3 Cr. (1-6).

DHM 713
**DAIRY FEEDING AND MANAGEMENT**
Topics include feeding dairy animals for growth, reproduction and production. Analysis of forage, nutrient content of feeds and nutrient requirements of all dairy animals will be covered. Students will develop and balance rations and apply their knowledge in developing different feeding systems. 3 Cr. (1-6).

DHM 714
**DAIRY HERD HEALTH**
Stresses sanitation and hygiene in promoting animal health. Causes, symptoms and methods of prevention and control of common diseases will be covered. During lab practice students will perform less complicated veterinary practices. Students will practice day-to-day herd management skills needed for herd health. 3 Cr. (2-3).

DHM 721
**FINANCING DAIRY ENTERPRISES**
The course covers financial aspects of dairy farming — including capital requirements, appraisal, sources of financing and credit applications. Major farm lending institutions will be emphasized. Financing as a management tool for the dairy operation will be covered. 3 Cr. (3-0).

DHM 722
**MILKING MANAGEMENT**
Udder anatomy, milk secretion, milking machine function and use, sanitation, mastitis control and prevention. Management systems related to different facilities and equipment options will be discussed. Includes costs of operation and maintenance. 3 Cr. (1-6).

DHM 723
**FARM RECORDS, ANALYSIS AND COMPUTERS**
The course stresses management principles based on sound, properly recorded farm business transactions. Exercises concentrate on development of accurate records related to dairy farm operations. Records are then analyzed for taxation, depreciation, net worth and loans. Strengths and weaknesses will be identified. Computers will be used during various portions of the course. 3 Cr. (3-0).

DHM 724
**ANIMAL BREEDING AND REPRODUCTION**
Emphasizes reading the genetic qualities of sires and determining herd deficiencies through judging and classifying cows. Includes animal genetics, breeding systems and reproductive organs. Covers breeding records, heat detection and artificial insemination procedures. 3 Cr. (1-6).

DHM 725
**REPLACEMENT STOCK MANAGEMENT**
Course stresses the economic importance of raising quality herd replacements. Management of young stock will include animals from calves to heifers ready to enter the milking herd. A wide range of practices will be discussed — including housing, health, identification and feeding. 3 Cr. (2-3).

## DENTAL HYGIENE (DHG)

DHG 100
**INTRODUCTION TO DENTAL HYGIENE**
An introduction to fundamental concepts and techniques of primary preventive measures. Includes use and care of dental equipment.
4 Cr. (2-6).

DHG 115
**ORAL ANATOMY AND HISTOLOGY**
The development and structure of the oral and facial regions with the emphasis on dental anatomy. 3 Cr. (3-0).

DHG 121
**DENTAL MATERIALS**
Principles and manipulation of the physical, mechanical and chemical properties of dental materials. 2 Cr. (1-3). *Prerequisites: DHG 100, DHG 115, CHM 107.*

DHG 123
**PERIODONTICS I**
A self-paced programmed course. Subject matter is presented through tapes, slides and manuals. Covers normal and healthy periodontium. The biological and clinical basis for the future understanding of periodontal disease. The pathology of the periodontium, including types, causes and prevention. 1 Cr. (0-3). *Prerequisite: DHG 100, DHG 115.*

DHG 124
**CLINICAL DENTAL HYGIENE I**
Lectures are combined with practical experience in the clinic. Students begin to provide preventive oral health services. 4 Cr. (1-9). *Prerequisites: DHG 100, DHG 115.*

DHG 126
**DENTAL RADIOLOGY**
The physics of radiation and radiation biology are related to the principles, techniques and interpretation of intra and extraoral radiographs. Quality in exposing and processing x-rays (with respect to the safety of the patient and operator) is stressed. 3 Cr. (2-3). *Prerequisites: DHG 100, DHG 115.*

DHG 230
**CLINICAL DENTAL HYGIENE II**
Additional experience in the techniques of performing complete patient services. Emphasizes advanced procedures. Special topics — including root planing and curettage, oral photography, pulp testing, ultrasonic scalers, etc. — are introduced and combined with clinical experience. 5 Cr. (1-12). *Prerequisites: DHG 121, DHG 123, DHG 124, DHG 126.*

DHG 236
**PERIODONTICS II**
A study of clinical diagnosis and treatment of periodontal disease. Stresses the importance of periodontal therapy and the role of the dental hygienist. 1 Cr. (1-0). *Prerequisites: DHG 121, DHG 123, DHG 124, DHG 126.*

DHG 239
**GENERAL AND ORAL PATHOLOGY**
General and oral disease. Emphasizes diseases and anomalies related to the oral cavity. 2 Cr. (2-0). *Prerequisites: DHG 121, DHG 123, DHG 124, DHG 126, BIO 125, BIO 201.*

DHG 241
**COMMUNITY DENTAL HEALTH**
Philosophy of community dental health. Techniques of teaching preventive dental health to groups. Fluoridation, special dental health programs, use of statistical materials. Rotating assignments give students opportunities to participate and observe in a variety of dental settings. 2 Cr. (2-0). *Prerequisites: DHG 230, DHG 236, DHG 239, DHG 243, DHG 245.*

DHG 242
**CLINICAL DENTAL HYGIENE III**
Additional experience in dental hygiene techniques. 4 Cr. (0-12). *Prerequisites: DHG 230, DHG 236, DHG 239, DHG 243, DHG 245.*

DHG 243
**DENTAL SPECIALTIES**
Discussion of pedodontics, endodontics, oral surgery, operative dentistry, combined with practice in expanded functions. 3 Cr. (2-3). *Prerequisites: DHG 121, DHG 123, DHG 124, DHG 126.*

DHG 244
**DENTAL PRACTICE ORIENTATION**
Ethics and jurisprudence, office procedures and management. Review for licensing examinations. 2 Cr. (2-0). *Prerequisites: DHG 230, DHG 236, DHG 239, DHG 243, DHG 245.*

DHG 245
**PHARMACOLOGY**
The study of drugs to familiarize the students with their properties, preparation, effects upon the body, the modes of administration. Special consideration is given to those drugs which are of dental value including antibiotics, pain relieving drugs, antiseptics and anesthetics. Emphasis is placed on first aid and emergency treatment. 2 Cr. (2-0). *Prerequisites: CHM 107, DHG 121, DHG 123, DHG 124, DHG 126.*

## DEVELOPMENTAL STUDIES (CHD, ENL, MTH, RDG)

The College awards institutional credit for courses numbered 001-099. This credit will appear on the student's transcript and be included in calculating the cumulative grade point average. However, credits earned in courses numbered 001-099 may not replace any course or be used as electives required in a given program.

CHD 100
**VALUE CLARIFICATION AND DECISION MAKING (8 weeks)**
This course is designed to improve the student's self understanding as well as to provide a "skills" orientation toward coping with life problems. The course is based on the concept that many of the skills, techniques, and strategies that individuals use in various life situations can be adapted and are almost universally applied in other kinds of life difficulties. The course attempts to show students that a "life plan" is complete only when one considers all aspects of the human condition as important. 1 Elective Cr. (1.5-1.5).

CHD 101
**CAREER EXPLORATION (8 weeks)**
Specific steps in the career decision making process are taught. Students explore the world of work as it relates to their values, interests and abilities. The course offers students a step by step process for use in making career decisions. 1 Elective Cr. (1.5-1.5).

ENL 011
**BASIC ENGLISH**
This course emphasizes writing skills: organization, structure, content, style, and mechanics. Individualized instruction, instructor control of the writing process, limited class size, and personalization of grammar instruction are characteristic of the course. 3 Institutional Cr. (3-0). This course may not replace any English requirement or elective in a program.

MTH 001
**ARITHMETIC**
Presents the basic concepts and skills of arithmetic to prepare students for required mathematics courses. Pre and post-tests are used to insure mastery of units covered. 3 Institutional Cr. (3-0).

MTH 002
**BASIC ALGEBRA**
Basic skills and concepts of arithmetic and algebra are presented based on the student's aptitudes and needs. Pre and post-tests are used to insure mastery of units covered. More than one semester may be required for mastery of the objectives. 3 Institutional Cr. (3-0).

RDG 010
**READING IMPROVEMENT**
Basic reading improvement for students with limited success in previous reading performance. Differences in ability and background will determine areas each student will pursue. Emphasis on comprehension, vocabulary, speed, spelling. Students learn to take notes on textbook assignments. Audio tapes, reading machines, individualized materials, and handout sheets are available to encourage individual learning. 3 Institutional Cr. (3-0).

RDG 099
**INDEPENDENT STUDY**
A course of study designed to meet the needs of students who need individualized help with reading skills or study skills. No credit. (1-3).

RDG 101
**COLLEGE READING AND STUDY SKILLS**
Students acquire or review basic reading and study skills needed for success in college courses. Reading skills include comprehension, vocabulary, and speed. Effective study habits and skills include outlining, summarizing, underlining, notetaking, and test-taking techniques. 2 Elective Cr. (2-0).

RDG 102
**COLLEGE STUDY SKILLS (5 weeks)**
Students develop effective study habits and skills. Emphasizes outlining, summarizing, underlining, notetaking and test-taking techniques. 1 Elective Cr. (2-2).

RDG 103
**LIBRARY SKILLS (5 weeks)**
Students become familiar with and learn to locate and use materials in the College's library. Emphasizes the preparation of the working outline of a research paper. 1 Elective Cr. (2-2).

## DIESEL MECHANICS (DMC)

DMC 713
**INTRODUCTION TO DIESEL MECHANICS (8 weeks)**
Precision mechanical measurement. Basic fastening devices. Gasoline and diesel engine operation and service. 7 Cr. (9-15).

DMC 714
**INTERNAL COMBUSTION ENGINES (8 weeks)**
Introduction to diesel engines. Electrical systems, emphasizing cranking, lighting, ignition, charging circuits, hand tools, power tools, and bench work. 7 Cr. (9-15).

DMC 723
**FOUR-CYCLE DIESEL ENGINES (8 weeks)**
Four-cycle diesel engine repair and overhaul. Emphasizes diesel truck engines. 7 Cr. (9-15). *Prerequisites: DMC 713, DMC 714.*

DMC 724
**TWO-CYCLE DIESEL ENGINES (8 weeks)**
Two-cycle diesel engine repair and overhaul. Diesel power applications, including trucks. Air induction system overhaul and troubleshooting. Basic air-conditioning/refrigeration principles. 7 Cr. (9-15). *Prerequisites: DMC 713, DMC 714, DMC 723.*

DMC 833
**FUEL INJECTION SYSTEMS I (8 weeks)**
Introduction to diesel fuel injection systems. Principles of governing and mechanical governing. Principles of jerk type fuel systems. 7 Cr. (9-15). *Prerequisites: DMC 713, DMC 714, DMC 724, or SOE 725.*

DMC 834
**FUEL INJECTION SYSTEMS II (8 weeks)**
Hydraulic governors. Principles of distributor type fuel systems. 7 Cr. (9-15). *Prerequisites: DMC 713, DMC 714, DMC 723, DMC 724, DMC 833.*

DMC 843
**TRUCK TRACTOR POWER TRAIN (8 weeks)**
Truck power train. Clutch, transmission, driveline, and differential. 7 Cr. (9-15). *Prerequisites: DMC 713, DMC 714, DMC 723, DMC 724.*

DMC 844
**TRUCK TRACTOR CHASSIS (8 weeks)**
Truck chassis, brakes, and suspension. State inspection procedures. 7 Cr. (9-15). *Prerequisites: DMC 713, DMC 714, DMC 723, DMC 724, DMC 843.*

## DRAFTING—ENGINEERING (EDT)

EDT 101
**MECHANICAL DRAWING**
Offered to students enrolled in non-drafting programs. Use of drawing instruments, lettering, geometric construction, orthographic projection, isometric and oblique, dimensioning, sections, auxiliary views, threads and fasteners, working drawings. 2 Cr. (1-3).

EDT 102
**ENGINEERING DRAFTING**
Practical applications of drafting in electrical construction for both domestic and commercial use. House diagrams with circuit schematics, wiring diagrams and developing bills of materials. Layout diagrams for public facilities — for example, the lighting system for a small community. 2 Cr. (1-3).

EDT 103
**GEARS AND CAMS**
A study of motion transfer through the use of gears and cams. 2 Cr. (1-3).

EDT 104
**AIRCRAFT DRAWINGS**
Aircraft blueprint reading for aviation maintenance technicians. Emphasizes reading and interpreting multiview drawings. Includes installation diagrams, schematics, the use of charts and graphs. Making three dimensional sketches for repair and alterations to aircraft. 2 Cr. (1-3).

EDT 107
**BLUEPRINT READING**
Blueprint reading for welders. Emphasizes the reading and interpretation of multiview drawings involving dimensions, notes, specifications and welding symbols. 2 Cr. (1-3).

EDT 108
**MANUFACTURING PROCESSES**
Covers the theory, demonstration, and hands-on applications of drilling, reaming, counterboring, countersinking, tapping, turning, milling, and grinding. Theory and demonstrations of numerical control equipment. 3 Cr. (2-3).

EDT 111
**BASIC DRAFTING I (8 weeks)**
Use of drawing instruments, lettering, geometric construction, orthographic projection, sectioning, dimensioning, auxiliary views, revolutions and freehand sketching. 4 Cr. (4-12).

EDT 112
**BASIC DRAFTING II (8 weeks)**
Screwthreads and fastening devices, axonometric projection; isometric drawings. Sheet metal intersections and developments. 4 Cr. (4-12). *Prerequisite: EDT 111.*

EDT 121
**POWER TRANSMISSION (8 weeks)**
Power and motion transfer through the use of gears and cams and other devices. 4 Cr. (4-12). *Prerequisite: EDT 112.*

EDT 122
**MECHANISMS (8 weeks)**
Power and motion transfer through the use of various linkages and mechanisms. 4 Cr. (4-12). *Prerequisite: EDT 121.*

EDT 201
**DESCRIPTIVE GEOMETRY**
Principles of orthographic projection. Fundamental problems involving the relationship of points, lines and planes in space; intersecting lines and planes; graphic computations for bearings and slopes of lines, strike and dip of planes. Solving problems related to the intersection of planes and solids. 3 Cr. (1-6). *Prerequisite: High school background in drafting.*

EDT 231
**DETAIL AND ASSEMBLY DRAWINGS (8 weeks)**
Accurate working drawings, sub-assemblies and assemblies. Drawing details from sketches and other engineering specifications; applied strength of materials; bearings; lubrications; elementary design and simplified drafting. 4 Cr. (4-12). *Prerequisite: EDT 112.*

EDT 232
**APPLIED DRAFTING TECHNIQUES (8 weeks)**
Making complex detail drawings based on industrial castings. Comprehensive study of close tolerance dimensioning. Introduction to fluid mechanics; metric conversion. 4 Cr. (4-12). *Prerequisite: EDT 231.*

EDT 241
**ADVANCED DETAIL I (8 weeks)**
Redesign of industrial castings into weldments. Making detail drawings from engineering layouts. Comprehensive study of welding, piping and layouts. Material strength in relation to weldments and piping design. 4 Cr. (4-12). *Prerequisite: EDT 232.*

EDT 242
**ADVANCED DETAIL II (8 weeks)**
Advanced study in and applications of drafting. The use of industrial layouts to make detail, assembly and sub-assembly drawings. Includes geometric tolerancing, true position dimensioning and surface specifications which conform to industrial standards; structural drafting and reprodrafting. 4 Cr. (4-12). *Prerequisite: EDT 232.*

## ECONOMICS (ECO)

ECO 201
**PRINCIPLES OF ECONOMICS**
Introduces basic economic terms and concepts. Analyzes United States economic system and compares it to those of other countries. Students apply theory in developing basic economic computations and graphs. Macroeconomics is emphasized; some microeconomic concepts (consumer demand, utility, elasticity of supply/demand) are studied. 3 Cr. (3-0).

ECO 202
**ECONOMIC ANALYSIS**
A study of the theory of the firm. Analysis of economic problems involved in public policy decisions. Recommended for students intending to major in economics. 3 Cr. (3-0). *Prerequisite: ECO 201.*

ECO 290
**SPECIAL STUDIES IN ECONOMICS**
A flexible course designed to meet special needs of economics students. 1-3 Cr. (1 to 3-0). *Prerequisite: Permission of the instructor.*

## EDUCATION (EDU)

EDU 111
**INTRODUCTION TO EDUCATION**
Study of the foundations of education — historical, economic, philosophical, and social — and their implications for education today. 3 Cr. (3-0).

EDU 121
**CHILDREN'S AND YOUNG ADULT LITERATURE**
Comprehensive survey of children's and young adult literature. Basic knowledge and understanding of authors, illustrators, and literary forms as background for work in a public area of a library. 3 Cr. (3-0).

## ELECTRIC (ELC, ELT)

ELC 711
**DIRECT CURRENT FUNDAMENTALS**
Basic electrical laws, electrical terms, batteries, electrostatics, electrical meters and instruments, direct current machinery. 6 Cr. (4-6). *Corequisite: MTH 710.*

ELC 712
**BASIC WIRING LAB**
Laboratory course in the tools and materials of the trade. Use and care of hand tools; instruction in wiring basic circuits; residential lighting and receptacle circuits, low voltage switching and control circuits; use of electrical underwriters rules in color coding. 3 Cr. (1-5).

ELC 715
**MOTOR MAINTENANCE AND REPAIR**
Electrical and mechanical features of various single phase motors; lab work; development of knowledge and skills in rewinding and repairing single phase motors. 3 Cr. (1-5).

ELC 721
**BASIC MOTOR CONTROL**
Theory and lab assignments in wiring starting and control equipment for DC and AC motors. Includes circuitry for start-stop stations, forward-reverse and jogging push button stations. Includes some speed control. 4 Cr. (3-3).

ELC 722
**ALTERNATING CURRENT FUNDAMENTALS**
Alternating current electricity as it relates to residential, commercial and industrial power use. Laws and formulas used to solve problems in the use of AC power; AC machinery; lab work in applying AC electrical principles. Practical experiences in hooking up equipment and instruments. 6 Cr. (4-6). *Prerequisite: ELC 711. Corequisite: MTH 500.*

ELC 726
**RESIDENTIAL BLUEPRINTS**
Electrical plans and specifications for a single family dwelling. Installation procedures for all types of circuits used in residential wiring. Includes switches, receptacles, special purpose outlets, heating systems, phones, television, and service entrance calculations. 3 Cr. (3-0).

ELC 832
**ADVANCED MOTOR CONTROL**
Theory and laboratory assignments further develop skills acquired in ELC 721. The study and use of speed controls, plugging equipment for braking and dynamic braking, timing relays involving pneumatic and dash pot types. 3 Cr. (1-5). *Prerequisite: ELC 721.*

ELC 833
**BASIC ELECTRICAL CONSTRUCTION LAB**
Experience in the use and installation of electrical materials. House wiring circuits, wiring boxes of many kinds, armored cable, Wiremold and romex, fluorescent and incandescent light switches and receptacle circuits. 3 Cr. (1-6). *Prerequisite: ELC 712.*

ELC 834
**BASIC ELECTRONICS FOR INDUSTRY**
Basic electronic concepts used in industrial control. Study of vacuum tubes, electronic circuits, solid state devices, symbols, and motor circuits. Laboratory practice in using these devices demonstrates their use in industry. 6 Cr. (4-6). *Prerequisite: ELC 722.*

ELC 835
**COMMERCIAL, INDUSTRIAL BLUEPRINTS & EQUIPMENT**
The installation of commercial and industrial systems and equipment using blueprints. Students learn to read and interpret these blueprints and become familiar with the equipment. 2 Cr. (2-0).

ELC 845
**ADVANCED ELECTRICAL CONSTRUCTION**
Practice in the installation of rigid conduit and other electrical wireways. Pulling in and wiring motor controllers and other electrical equipment. Study of blueprints for large electrical construction jobs. 3 Cr. (0-9). *Prerequisite: ELC 833.*

ELC 847
**PROGRAMMABLE CONTROL**
A practical and theoretical approach to the installation, programming, and maintenance of programmable control (P.C.) equipment. The application of P.C. in manufacturing processes. Theory covers the proper installation of P.C. equipment, especially the correct grounding applications of processor units and the development of P.C. ladder diagrams. The practical work includes programming and changing operational programs to prepare the student to work as a "line mechanic" on production lines using programmable controls. 4 Cr. (3-3). *Prerequisites: ELC 721, ELC 832 or related industrial experience.*

ELC 848
**ELECTRICAL MACHINERY ANALYSIS**
Theory and laboratory instruction in complex metering methods for industrial equipment, static and logic circuitry, equipment troubleshooting and repair using schematic diagrams, power transmission and distribution. 4 Cr. (2-6). *Prerequisite: ELC 722.*

ELC 849
**INDUSTRIAL CONTROL**
Industrial control devices and control circuits and their applications in practical systems. Emphasizes solid state technology; laboratory experience in constructing and troubleshooting the solid state control circuits used in industry. 4 Cr. (3-3). *Prerequisites: ELC 832 and ELC 834.*

ELT 110
**ELECTRICITY FOR THE TRADES**
Theory and laboratory assignments in electrical design. Symbols used on building construction blueprints. Explanation of electrical diagrams. The use of the National Electrical Code as a governing agent which establishes wiring requirements. Residential wiring, switching, lighting, receptacles, and service entrances in the laboratory. 3 Cr. (2-3).

ELT 111
**DIRECT CURRENT FUNDAMENTALS**
Basic principles of electricity and the laws and formulas which are used to solve electrical problems. Principles of magnetism and their relationship to direct current generators and motors and other electrical machinery. Laboratory work trains students to hook up equipment and instruments. 5 Cr. (4-3). *Corequisite: MTH 103.*

ELT 112
**BASIC WIRING LAB**
Instruction in wiring basic electrical circuits, residential lighting and receptacle circuits. Low voltage switching and control circuits. Electrical underwriters rules. Proper use and care of hand tools. 3 Cr. (1-6).

ELT 113
**ACCIDENT PREVENTION**
Principles of accident prevention in industry. Electrical safety procedures in all human activities; lifesaving techniques. 2 Cr. (2-0).

ELT 122
**ALTERNATING CURRENT FUNDAMENTALS**
The fundamental principles of the behavior and flow of alternating current electricity. Includes problem solving, current, voltage, impedance, reactance and power factor in series and parallel circuits. Operating principles of AC motors, generators and control equipment. 5 Cr. (4-3). *Prerequisite: ELT 111. Corequisite: MTH 104.*

ELT 124
**ELECTRICAL BLUEPRINT READING AND NATIONAL ELECTRIC CODE**
The study of electric blueprints and specifications used for residential, commercial, and industrial systems in buildings. Calculating the load requirements established by Codes — the number of circuits and size of feeders. Designing and drawing layout diagrams, schematic diagrams, control diagrams. The study and design of remote control systems. Minimum standards set by the National Electrical Code. 4 Cr. (4-0).

ELT 125
**BASIC ELECTRICAL CONSTRUCTION**
Additional study in the use of electrical equipment and materials. Includes all types of wiring devices and wiring systems. Planning and installing electrical systems, bending conduit, pulling in wires, connecting devices, lighting systems and distribution systems. 3 Cr. (2-3). *Prerequisite: ELT 112 or ELC 712.*

ELT 233
**BASIC ELECTRONICS**
Fundamentals of electronics. Basic symbols, circuit configurations, electron tubes, solid state devices; rectifier, amplifier, and oscillator circuits used in industrial work. Laboratory practice in industrial electronics includes the layout and assembly of various circuits and solid state devices. 6 Cr. (4-6). *Prerequisite: ELT 122.*

ELT 234
**ELECTRICAL MOTOR CONTROL**
Motor control systems in industry — both simple and complex. Tracing circuits and troubleshooting a system from a schematic drawing. The principles of rotating and magnetic amplifiers, and static switching. 4 Cr. (3-3).

ELT 241
**ELECTRICAL SYSTEMS ANALYSIS**
The use of electrical equipment and electrical testing apparatus to aid in locating and repairing malfunctions in equipment. Preventive maintenance and maintenance records. Use of voltmeters, ammeters, wattmeters, ohmmeters, megohmmeters, wheatstone bridge, tachometer, and all hand tools used in the electrical trade. 2 Cr. (1-3). *Prerequisite: ELT 122.*

ELT 244
**ADVANCED ELECTRICAL THEORY**
Solution of network problems. Problems involving the charge and discharge of capacitors and rotating vectors. Problems in alternating electricity. 3 Cr. (3-0). *Prerequisite: ELT 122.*

ELT 245
**INTRODUCTION TO PROGRAMMABLE LOGIC CONTROL**
A theoretical and practical approach to the application of Programmable Logic Control (PLC) in manufacturing processes. Theory covers the development of PLC ladder diagrams as applied in control systems. Practical laboratory work with "industry standard" control equipment prepares students for technician level positions involving a wide range of production control work. 4 Cr. (3-3). *Prerequisite: ELT 234.*

ELT 531
**AIR CONDITIONING/REFRIGERATION ELECTRICITY**
Basic AC and DC circuitry, laws of electricity, uses of meters, and safety procedures in air conditioning and refrigeration. Practical techniques in wiring and sections of the National Electrical Code. 6 Cr. (4-6).

ELT 541
**ELECTRIC MOTORS AND REFRIGERATION CONTROLS**
Theory of operation, applications, installation, and troubleshooting of the electrical control circuits and control devices used in air conditioning and refrigeration. The operation and application of basic types of motors used in the industry. 5 Cr. (3-6).

## ELECTRONICS (ENT)

ENT 111
**DC - AC THEORY**
Introduction to electrical and electronics theory. Includes basic atomic theory, Ohm's Law, Kirchoff's Law with formulas and calculations for network analysis; AC waveforms; capacitance and inductance, resonance; vector analysis, complex AC numbers, including the "j" operator. 5 Cr. (5-0). *Corequisite: MTH 103.*

ENT 115
**ELECTRONICS LABORATORY I**
Application of basic AC-DC theory concepts. Wiring and soldering techniques and circuit construction practices for electronic circuits. Introduction to the use of test equipment and measuring techniques. Safety practices for electronics. 3 Cr. (0-9). *Prerequisites or Corequisites: ENT 111, ENT 116.*

ENT 116
**INTRODUCTION TO SOLID STATE DEVICES**
Physics of solid state devices. Their essential characteristics, symbols and quiescent operating modes. Introduction to basic circuits. 3 Cr. (3-0).

ENT 125
**INTERMEDIATE SOLID STATE DEVICES AND CIRCUITS**
Continuation of ENT 116. AC equivalent circuits, design analysis; op-amps; integrated circuits; multi-stage design; feedback analysis. 5 Cr. (5-0). *Prerequisite: ENT 116. Corequisite: MTH 104.*

ENT 126
**ELECTRONICS LABORATORY II**
Construction and measurement of a variety of solid state devices and circuits. Measurement techniques are used to collect data. Emphasizes the presentation of collected data in technical report form using narrative and graphic techniques. 3 Cr. (0-9). *Prerequisites or Corequisites: ENT 115, ENT 125.*

ENT 127
**INTRODUCTION TO DIGITAL ELECTRONICS**
Digital number systems and codes. Introduction to basic gates and associated circuits; digital analysis by timing diagrams. 3 Cr. (3-0).

ENT 233
**COMMUNICATIO', CIRCUITS AND SYSTEMS**
Modulation systems for transmission and reception; wave propagation; transmission lines and antennas; digital communication techniques; high power vacuum tube circuits. 5 Cr. (5-0). *Prerequisite: ENT 125.*

ENT 237
**ELECTRONICS LABORATORY III**
Advanced prototyping techniques. Communication circuit alignment and measurement with specialized test equipment. Digital circuit implementation with a variety of logic families. Advanced technical report writing. 3 Cr. (0-9). *Prerequisites or Corequisites: ENT 233, ENT 238.*

ENT 238
**INTERMEDIATE DIGITAL ELECTRONICS**
Continuation of ENT 127. Analysis of state of the art digital circuits. Emphasizes digital measuring equipment and techniques. 3 Cr. (3-0). *Prerequisite: ENT 127.*

ENT 241
**CALIBRATION AND STANDARDIZATION**
Principles of electronic instrument calibration and standardizing techniques. Instruments used in laboratory are calibrated according to the National Bureau of Standards. 3 Cr. (2-3).

ENT 246
**INTRODUCTION TO MICROPROCESSORS**
Basic microprocessor architecture; microcomputer programming techniques and software aids. Methods of interfacing microcomputers and digital systems. 5 Cr. (5-0). *Prerequisites: ENT 127, ENT 238. Corequisite: ENT 247.*

ENT 247
**ELECTRONICS LABORATORY IV**
Lab experiments will complement ENT 246. Each student will use a microprocessor trainer to learn programming and interfacing techniques. Use of specialized digital measuring instrumentation, including complex logic analyzers and storage oscilloscopes. 3 Cr. (0-9). *Corequisite: ENT 246.*

ENT 248
**ADVANCED CIRCUIT ANALYSIS**
State of the art devices and circuits, both analog and digital, are analyzed in detail to train students in advanced troubleshooting techniques. 3 Cr. (3-0).

## ENGINEER IN TRAINING (EIT)

EIT 201
**STATICS**
The basic principles of statics: various force systems, static equilibrium of the force systems, friction and miscellaneous static related problems. The practical applications of these principles – analysis of roof and bridge trusses, beam under various loading conditions; belt friction and rolling resistance, flexible cables, etc. 3 Cr. (3-0).

EIT 202
**STRENGTH OF MATERIALS I**
Outlines properties of engineering materials, behavior of materials under loads, stress and deformations, riveted and welded joints, torsion, centroids, moment of inertia, areas of shear and moments in beams, stresses in beams and design of beams. Students learn to analyze and design simple beams, riveted and welded connections, shafts subjected to torsion, etc. 3 Cr. (3-0).

EIT 203
**DYNAMICS**
Basic principles of dynamics, i.e., kinematics of rectilinear motion, curvilinear motion, kinetics of motion, plane motion, and their effects on moving or static bodies. The application of these principles — the use of work, energy, power and impulse, momentum and impact concepts to solve various motion problems. 3 Cr. (3-0).

EIT 204
**FLUID MECHANICS**
Basic principles of fluid mechanics and their applications in practical fluid mechanics problems. Properties of fluids, fluid pressure at rest, buoyancy effect, steady flow of liquids in closed conduits, as well as in open channels, losses in both cases, flow measuring devices, variable flow, forces produced by fluids in motion and dimensional analysis and similitudes. All equations of the fluid flow are derived from the basic Bernoulli equation. 3 Cr. (3-0).

EIT 205
**STRENGTH OF MATERIALS II**
Continuation of Strength of Materials I. Covers complex problems such as deflection of beams by moment-area method, analysis of statically indeterminate beams by three moment equation and moment distribution methods, combined bending and axial stresses, analysis and design of timber, steel and aluminum columns and special topics of strain energy and impact loadings. 3 Cr. (3-0).

EIT 206
**ENGINEERING ECONOMICS**
Study of economics in relation to engineering. 3 Cr. (3-0).

EIT 207
**ENGINEERING CHEMISTRY**
An intensive course of chemical calculations based on chemical reactions and physical properties of substances. Includes theoretical topics needed for calculations. 3 Cr. (3-0).

EIT 208
**THERMODYNAMICS**
Energy transfer in relation to changes in physical properties of substances. 3 Cr. (3-0).

EIT 209
**ENGINEERING PHYSICS**
A study of physics as it relates to engineering. 3 Cr. (3-0).

EIT 210
**ENGINEERING ELECTRONICS**
Fundamental principles of electrical circuit analysis are applied to EIT problems. Includes Ohm's law, series circuits, parallel circuits, series-parallel circuits, network theorems, magnetism, electro-magnetic induction, alternating current and voltage inductance, inductive reactance, capacitance, capacitive reactance, capacitive circuits, alternating current circuits, complex numbers and resonance. 3 Cr. (3-0). *Prerequisites: algebra, trigonometry and basic calculus.*

## ENGLISH (ENL)

ENL 011
**BASIC ENGLISH**
This course emphasizes writing skills: organization, structure, content, style, and mechanics. Individualized instruction, instructor control of the writing process, limited class size, and personalization of grammar instruction are characteristic of the course. 3 Institutional Cr. (3-0). This course may not replace any English requirement or elective in a program.

ENL 111
**ENGLISH COMPOSITION I**
Basic composition — language structure, rhetorical principles, orderly, clear writing, and readings in expository prose. Offers the student a variety of methods for use in developing his/her own written expression. Analysis, discussion, and practice of such methods as description, definition, narration, comparison, classification and argumentation. The student uses writing to explain and explore, gaining experience in essential writing and research skills. 3 Cr. (3-0).

ENL 121
**ENGLISH COMPOSITION II**
Continues the writing principles developed in ENL 111. Includes the study of poetry, prose and drama. Emphasizes critical analysis and interpretation of literature through discussion and written assignments. Through writing about literature and its themes, students examine the purpose, argument and style of literary writing. Students explore the importance of literature to society; study the impact of language upon the reader and apply the skills learned in ENL 111. 3 Cr. (3-0). *Prerequisite: ENL 111.*

ENL 201
**TECHNICAL WRITING**
Intensive survey of technical writing with practice in preparing reports, instructions, memos and other communication for business and industry. Students develop skills in analyzing audiences and writing for readers both with and without technical expertise. 3 Cr. (3-0). *Prerequisite: ENL 111 or permission of instructor.*

ENL 202
**FUNDAMENTALS OF SPEECH**
Includes public speaking, its methods and evaluation, and the development of persuasive speech. The study of modern rhetorical theory in interpersonal and group dynamics; mass persuasion and non-verbal behavior. The student will participate as speaker in a variety of situations and roles, including conflict, mediation, support, and common ground. 3 Cr. (3-0). *Prerequisite: ENL 111 or permission of instructor.*

ENL 231
**WORLD LITERATURE**
Students read literature which expresses the western belief in the paramount importance of the individual. Surveys representative works of continental Europe from classical Greek/Roman periods to the present. 3 Cr. (3-0). *Prerequisite: ENL 121.*

ENL 235
**CREATIVE WRITING**
Development of skills in writing imaginative prose. Students present short stories for class criticism and review. 3 Cr. (3-0).

ENL 250
**LITERATURE OF THE AMERICAN INDIAN**
A reading of the oral and written literature of Native Americans, with emphasis on literature produced in North America. The works will be approached through literary criticism, philosophy, religion, psychology, history, and social criticism. 3 Cr. (3-0).

ENL 251
**MASTERS OF HORROR: HORROR IN LITERATURE AND THE MASS MEDIA**
A humanities elective exploring the serious treatment of "horror" by authors from the 17th century to modern times, including Shakespeare, Shelley, Poe, Lovecraft and Bradbury. Also examines the evolution of the pulps, the horror comic, the horror radio series and the horror film as forces that shape and mirror the mainstream of American social thought. 3 Cr. (3-0).

ENL 290
**SPECIAL STUDIES IN ENGLISH**
Individual guidance in advanced studies. Admission by permission of the instructor. 1-3 Cr. (1 to 3-0).

ENL 711
**COMMUNICATIONS**
Skills and competencies in basic technical writing and oral communication to meet the needs of the applied arts certificate student. 3 Cr. (3-0). (With permission of instructor and upon demonstration of the appropriate writing skills, ENL 201 may be substituted for ENL 711. Course substitution form must be filed if ENL 711 is required in the student's curriculum. See Humanities and Communication Arts Division Director.)

## ENVIRONMENTAL SCIENCE (ESC)

ESC 100
**ENVIRONMENTAL SCIENCE**
Designed especially for the non-science student who wants to understand environmental systems and problems from a scientific viewpoint. Covers many aspects of energy, land, water, and air pollution and their effect on living organisms, especially people. 3 Cr. (3-0).

## FLORICULTURE (FLR, OHT)

FLR 121
**GREENHOUSE CROP PRODUCTION I**
An introduction to greenhouse crop production. Emphasizes environmental control, plant culture, facilities, and equipment. Includes demonstration of techniques. 3 Cr. (2-3).

FLR 122
**FLORAL DESIGN I**
Instruction in and application of principles in the art of floral design. Includes form, styles and composition. Covers designing floral arrangements, wreaths, sprays, baskets, bouquets, wedding flowers, and corsages. 3 Cr. (1-6).

FLR 232
**GREENHOUSE CROP PRODUCTION II**
Production of cut flowers and potted plants. Emphasizes techniques used for important commercial crops. Students will grow crops in the College's greenhouses. 3 Cr. (2-3).

FLR 233
**FLORAL DESIGN II**
A continuation of FLR 122. Covers designing dried and silk arrangements. Stresses shop layout and routine procedures in the operation of a flower shop. 3 Cr. (2-3). *Prerequisite: FLR 122.*

FLR 243
**GREENHOUSE CROP PRODUCTION III**
Production of potted plants, bedding plants, and other crops using commercial techniques. Includes production, planning, crop rotation, and the role of management. 3 Cr. (2-3).

FLR 244
**FLOWER SHOP OPERATION**
Emphasizes buying, pricing, sales, inventory, personnel, record keeping, and general principles related to the commercial retail flower shop. Lab practice in perfecting design techniques and developing originality— emphasizes wedding designs. 3 Cr. (2-3).

FLR 245
**HOUSE AND CONSERVATORY PLANTS**
Identification, culture, propagation and use of house and conservatory foliage plants. Course includes artificial lighting, indoor landscaping for homes, malls and business, soils and fertilizers for commercial growing, insects, diseases, and cultivation problems associated with foliage plants. 3 Cr. (2-3).

OHT 114
**HORTICULTURE SOILS**
Study of soil texture, structure, organic matter, and plant nutrients as related to the use of lime and fertilizers. Includes synthetic soils and moisture-air relationships. 3 Cr. (2-3).

OHT 115
**WOODY PLANTS I**
An introduction to the study of trees, shrubs and vines grown in nurseries for landscape purposes. The course stresses the identification and uses of woody plants. 2 Cr. (1-3).

OHT 116
**HERBACEOUS PLANTS**
The classification, identification, and general culture of perennials, bulbs and roses. Practice in landscape use and design of flower borders. 3 Cr. (2-3).

OHT 234
**PLANT PROPAGATION**
Theory and practice of plant propagation by sexual and asexual means — applications in floriculture production, nursery production, and forestry. 3 Cr. (2-3).

OHT 239
**PLANT INSECTS & DISEASES**
The insects and diseases of horticulture crops. The nature, structure, growth habits, harmful effects, and control of insects and related forms. The most common and harmful plant diseases are studied for identification and control. 3 Cr. (2-3). *Prerequisite: BIO 111.*

OHT 246
**HORTICULTURE MECHANICS**
Operation and maintenance of horticulture equipment. Includes small gasoline engines, electric motors, electrical fans, environmental controls, and other soil working and irrigation equipment. 3 Cr. (2-3).

## FOOD AND HOSPITALITY (FHD)

FHD 111
**INTRODUCTORY FOODS**
Basic principles of chemistry and physics related to food preparation. Generally accepted food preparation practices. An introduction to food purchasing and an orientation to the food service industry. 3 Cr. (2-3).

FHD 112
**NUTRITION**
Sources and functions of nutrients and how they relate to body functions. Essentials of an optimum diet. Includes nutritive requirements for each stage of the life cycle. 3 Cr. (3-0).

FHD 113
**FIELD EXPERIENCE IN MANAGEMENT SYSTEMS I (8 weeks)**
Introductory hospital and dietary experience. Includes orientation to a hospital and work experience in dietary office practice, food preparation, beltline service, and patient visitations. 1 Cr. (0-6). (32 Clinical Hours).

FHD 114
**INTRODUCTION TO FOOD SERVICE ADMINISTRATION AND MEDICAL CARE ORGANIZATIONS**
Organization and management of a dietary unit. The role of the technician and working relationships with other health care professionals. Federal, state and local food handling regulations. Examination of total health care systems, organizational structure, medical records, laws, and ethics. 2 Cr. (2-0).

FHD 115
**PURCHASING, STORAGE, AND SANITATION**
Managerial training in all facets of purchasing. Correct procedures for good storage and sanitation. Training staff in correct procedures to assure production of safe food. 3 Cr. (3-0).

FHD 121
**QUANTITY FOOD PREPARATION**
Menu planning, purchasing, preparation, and serving large amounts of food. Emphasizes safe and efficient use of quantity food preparation equipment, cooking with steam and deep fat, meats, and production management. 3 Cr. (2-3).

FHD 122
**DIET THERAPY WITH DIETETIC SEMINAR**
In-depth study of principles of therapeutic diets. Includes medical terminology, tours of community health services, and familiarity with diet manuals. Students learn interviewing, counseling techniques and sources for professional updating. Seminar includes study of specific therapeutic cases. 3 Cr. (3-0). *Prerequisite: FHD 112.*

FHD 123
**FIELD EXPERIENCE IN MANAGEMENT SYSTEMS II**
Students work in the dietary department in areas related to the subjects they are studying. Six hour lab periods rotate between quantity food production, menu and cost control, and diet therapy. Students meet with the dietitian supervisor one hour a week to discuss unanswered questions and learning experiences. 3 Cr. (1-6). *Prerequisite: FHD 113.*

FHD 125
**MENU PLANNING AND COST CONTROL**
Techniques of planning nutritious meals for commercial establishments and institutions; the printed menu; controlling costs through good menu planning and other techniques. 3 Cr. (3-0).

FHD 126
**FRONT OFFICE MANAGEMENT AND HOUSEKEEPING**
Introduction to hotel and motel management. Managing a front office – includes promotion, guest registration, and cost control; management of the housekeeping department. Includes supervised work experience at area hotels and motels. 3 Cr. (2-3). Offered every other year in the spring term.

FHD 201
**ADVANCED QUANTITY FOODS**
Cooking foods in quantity. Emphasizes advanced skills of food preparation, ordering and receiving, individual learning objectives. Will strengthen areas in which student needs help. 2 Cr. (0-6). *Prerequisite: FHD 121.*

FHD 231
**FIELD EXPERIENCE IN MANAGEMENT SYSTEMS IV**
Students train in kitchen and geriatric therapeutics in a nursing home. Emphasizes personnel management, hiring, training, and record keeping. 3 Cr. (1-6). *Prerequisite: FHD 250.*

FHD 234
**HEALTH CARE DELIVERY SYSTEMS**
In-depth study of the health care programs available to the public. Present problems and future directions of health care institutions and the medical profession. Includes factors that consumers of health care services should know about in order to avoid fads and quacks. 3 Cr. (3-0).

FHD 235
**PERSONNEL MANAGEMENT, WORK SIMPLIFICATION**
Management techniques, interpersonal relationships, motivations, manual motions, work place layout, production job analysis and evaluation. Establishing work loads. 3 Cr. (3-0).

FHD 236
**HOSPITALITY MANAGEMENT AND THEORY**
Supervised practical experience in various areas of food and hospitality management and production. Lecture and discussion cover work schedules, employer-employee relations, food purchasing and preparation, personnel supervision and training, menu planning and other subjects related to the student's choice of practicum. 2 Cr. (1-5).

FHD 241
**BEVERAGE MANAGEMENT AND CATERING**
Techniques of restaurant management. Includes all types of beverages and bar management. Management of the catered meal. Preparation and presentation of classic and international cuisines. 3 Cr. (2-3). *Prerequisite: FHD 121 or work experience in food preparation for a varied menu.*

FHD 242
**FIELD EXPERIENCE IN MANAGEMENT SYSTEMS V**
Management in various nutrition programs. Students work in a school, with feeding groups of the aged, and in a five-meal-a-day hospital program which emphasizes renal and cancer patients. 3 Cr. (1-6). *Prerequisite: FHD 231.*

FHD 245
**EQUIPMENT AND LAYOUTS**
Familiarizes students with current types of equipment and ways to lay out facilities for best production, service, safety, and sanitation. 3 Cr. (3-0). *Prerequisite: FHD 121, or commercial or institutional work experience.*

FHD 246
**HOSPITALITY MERCHANDISING**
Sales, merchandising and promotion techniques are applied to food and lodging establishments. Each student does an in-depth feasibility study on a possible investment – includes financing and merchandising. 3 Cr. (3-0).

FHD 250
**HOSPITALITY, DIETETIC WORK EXPERIENCE (MANAGEMENT SYSTEMS III)**
Prior to the beginning of the fourth semester a work experience of 120 hours is required. Dietetic Technician students work in an institutional dietary department under a registered dietitian. Food and Hospitality students work in the food and hospitality industry. Students are evaluated by employer/supervisor, submit a written report, and discuss their experience with the instructor. 1 Cr. (120 Clinical Hours). *Prerequisite for Dietetic Technician Program: FHD 123.*

## FOREST TECHNOLOGY (FOR)

FOR 111
**DENDROLOGY**
Classification, identification, and distribution of woody plants in the United States. Emphasizes species of local commercial importance. 3 Cr. (2-3).

FOR 113
**FOREST MENSURATION**
Measurement of standing trees, of logs and other cut wood products. Calculating the contents of these products in terms of board feet, cubic feet, cords, and pounds. Measuring growth in trees and forests. 3 Cr. (2-3).

FOR 115
**FOREST BOTANY**
The study of plant physiology and anatomy with special reference to trees. The stem structure of trees and the identification of commercial tree species based on microscopic characteristics of wood. 3 Cr. (2-3).

FOR 121
**PHOTOGRAMMETRY AND FOREST SURVEYING I**
The basic techniques of photogrammetry (the use of photographs in surveying and forest measurement), photo interpretation; introduction to surveying, including the fundamentals of plane surveying and the use and care of equipment. 3 Cr. (1-6).

FOR 124
**ADVANCED FOREST MENSURATION**
Determining the quality of logs and trees. Estimating volumes of large timber areas by different sampling techniques. The use and interpretation of aerial photos in forest surveys. 3 Cr. (2-3).

FOR 126
**FOREST ECOLOGY AND WILDLIFE MANAGEMENT**
Introduction to ecology, upon which the management of forest and wildlife resources may be based. Improves the student's understanding of the ecological relationship of forest and wildlife communities. 3 Cr. (2-3).

FOR 232
**FOREST SURVEYING II**
Theory and practice of plane surveying techniques used in property and boundary surveys, map making, construction surveys, and computations. Emphasizes the use of these techniques in forestry. 3 Cr. (2-3). *Prerequisite: FOR 121.*

FOR 233
**EQUIPMENT AND MACHINERY**
The operation, care and maintenance of logging machinery, forest fire control equipment and related mechanical devices commonly used in forest operations. 3 Cr. (2-3).

FOR 234
**TIMBER HARVESTING**
Cutting trees. Skidding and moving timber from the woods to the point of manufacture. Modern logging methods and techniques. Includes cutting tree stems into lengths and units of highest economic value. 3 Cr. (2-3).

FOR 236
**SILVICULTURE**
Forestry practices and systems used to grow and manage trees and forests for the sustained production of timber products. 3 Cr. (2-3).

FOR 242
**FOREST PRODUCTS**
Converting round timber products into a semi-finished state. The manufacturing process of changing these raw materials into finished consumer products. Includes seasoning lumber and preservative treatments of wood to improve its usefulness. 3 Cr. (2-3).

FOR 247
**FOREST LAND MANAGEMENT AND RECREATION**
Basic concepts of managing publicly and privately owned forest lands used for more than one purpose (for example, recreation and logging). Shows the importance of managing the land for recreation, wildlife, and water. 3 Cr. (2-3).

FOR 248
**FOREST PROTECTION**
The causes and effects of forest fires. Methods used to control forest fires. The identification, effects and control of other harmful agents, principally insects and diseases. 3 Cr. (3-0).

## GEOGRAPHY (GEO)

GEO 101
**PHYSICAL GEOGRAPHY**
Introduction to the fundamentals of geography — maps, mapping, land, water, soil, vegetation, atmosphere, climate. Covers the relationship between physical and human environment. 3 Cr. (3-0).

## GEOLOGY (GEL)

GEL 105
**PHYSICAL GEOLOGY**
Basic concepts in the study of the Earth. Relationships between Earth materials and the geologic agents and processes that create and modify minerals, rocks, landforms, continents, and the ocean basins. 4 Cr. (3-3).

GEL 106
**HISTORICAL GEOLOGY**
Origin of the Earth, evolution of its crust, and the development and evolution of life. Relationships among rock units as evidence for geologic history; fossils as documents of evolution, chronology and environment; relative and absolute age dating of the Earth. 4 Cr. (3-3).

GEL 290
**SPECIAL STUDIES IN GEOLOGY**
Special attention to particular abilities and interests of students. Individual guidance in advanced studies. Admission by permission of the instructor. (1-3, laboratory as required).

## GERMAN (GER)

GER 111
**BEGINNING GERMAN I**
Basic grammar and language structure. Comprehension, speaking and reading, with the emphasis on pronunciation and accent. 3 Cr. (3-0). *Prerequisite: Permission of the instructor.*

GER 121
**BEGINNING GERMAN II**
Continuation of GER 111. 3 Cr. (3-0). *Prerequisite: GER 111.*

## GOVERNMENT (GOV)

GOV 231
**AMERICAN GOVERNMENT—NATIONAL**
Federal government, its powers and organization. Functions of legislative, executive and judicial branches. Students examine the historical development of our federal system and analyze the relationships between social forces, government and political action. 3 Cr. (3-0).

GOV 241
**STATE AND LOCAL GOVERNMENT**
State and local government institutions, their functions and responsibilities; intergovernmental relations. 3 Cr. (3-0).

GOV 290
**SPECIAL STUDIES IN GOVERNMENT**
Special attention to particular abilities and interests of students. Individual guidance in advanced studies. Admission by permission of the instructor. 1-3 Cr. (1 to 3-0).

## GRAPHIC ARTS (GCO)

GCO 511
**LAYOUT AND DESIGN**
Materials, tools and techniques used in preparation of copy for reproduction; paste-up and color separation overlays. 4 Cr. (2-6).

GCO 512
**TYPOGRAPHIC COMPOSITION**
Fundamentals of typesetting. Theory and practice in the care and use of composing (typesetting) machines, both hot and cold (mechanical) and cold (photo). 4 Cr. (2-6).

GCO 515
**LAYOUT AND DESIGN**
For students enrolled in programs other than Graphic Arts. Materials, tools and techniques used in preparation of copy for reproduction; paste-up and color separation overlays. 3 Cr. (2-3).

GCO 516
**TYPOGRAPHIC COMPOSITION**
For students enrolled in programs other than Graphic Arts. Fundamentals of typesetting. Theory and practice in the care and use of composing (typesetting) machines, both hot and cold (mechanical) and cold (photo). 3 Cr. (2-3).

GCO 521
**PROCESS CAMERA**
Darkroom procedures for reproducing line and halftone copy using process cameras. 4 Cr. (2-6).

GCO 522
**FILM ASSEMBLY AND IMPOSITION**
Study and application of various methods for assembling negatives and positives to create flats (preparation for making offset plates). 4 Cr. (2-6).

GCO 525
**PROCESS CAMERA**
For students in programs other than Graphic Arts. Darkroom procedures for reproducing line and halftone copy using process cameras. 3 Cr. (2-3).

GCO 526
**FILM ASSEMBLY AND IMPOSITION**
For students in programs other than Graphic Arts. Study and application of various methods for assembling negatives and positives to create flats (preparation for making offset plates). 3 Cr. (2-3).

GCO 631
**PLATEMAKING, SUBSTRATES AND FINISHING**
Identification, selection, and relationship of paper and board stocks. Non-printing conversions for the printing, publishing, and allied industries. Theory and applications related to the various types of offset plates and processing procedures. 4 Cr. (2-6).

GCO 632
**PRESS OPERATIONS**
Printing press operation. Ink mixing and matching, registration; preventive maintenance for quality analysis. 4 Cr. (2-6).

GCO 635
**PRINTING ESTIMATING PRACTICES**
Theory and practice in estimating job costs, writing specifications and planning jobs for production. 3 Cr. (3-0).

GCO 641
**ADVANCED TYPOGRAPHIC COMPOSITION**
Continuation of GCO 511 and GCO 512. Emphasizes photo composition as it relates to the composition industry. Students will do individual projects and/or live work. 3 Cr. (1-6). *Prerequisites: GCO 511, GCO 512.*

GCO 642
**ADVANCED PROCESS CAMERA AND STRIPPING**
Advanced study in black and white tone reproduction, special effects and basic color procedures. Advanced work in color stripping and photo-art techniques. 3 Cr. (1-6). *Prerequisites: GCO 521, GCO 522.*

GCO 645
**PRINTING PROCESSES**
Theory and application of the four major printing processes: letterpress, lithography, gravure, and silk screen. 3 Cr. (1-6).

## HEATING AND AIR CONDITIONING (HAC)

Courses offered at Lewisburg Federal Penitentiary.

HAC 711
**HEATING AND AIR CONDITIONING I**
Introduction to heating and air conditioning systems; use of tools of the trade; board wiring, control functions, gas burner theory and servicing, IBR heating. 22 Cr. (19-9).

HAC 721
**HEATING AND AIR CONDITIONING II**
Study of IBR cooling, radiation as applied to heating and cooling, piping hydronics, duct design and installation, steam systems. 22 Cr. (19-9).

HAC 731
**HEATING AND AIR CONDITIONING III**
Installation of systems, heating servicing and troubleshooting; introduction to solar heating; cooling theory and servicing. 22 Cr. (19-9).

## HISTORY (HIS)

HIS 111
**WESTERN CIVILIZATION I**
Survey and analysis of major intellectual, social, political, and economic developments of western civilization — from ancient times until the eighteenth century. 3 Cr. (3-0).

HIS 121
**WESTERN CIVILIZATION II**
Survey and analysis of major intellectual, social, political, and economic developments of western civilization — from the eighteenth century until the present. 3 Cr. (3-0).

HIS 231
**UNITED STATES—SURVEY I**
Political, economic, and social development of the United States from colonial times through the Civil War and Reconstruction Period. 3 Cr. (3-0).

HIS 241
**UNITED STATES—SURVEY II**
Political, economic, and social development of the United States from 1877 up to and including the Civil Rights Movement. 3 Cr. (3-0).

HIS 290
**SPECIAL STUDIES IN HISTORY**
Individual guidance in advanced studies. Admission by permission of the instructor. 1-3 Cr. (1 to 3-0).

## INDUSTRIAL DRAFTING (IND)

IND 714
**BASIC DRAFTING (8 weeks)**
Introduction to industrial drawing; lettering; geometric drawing; orthographic projections; pictorial projections; sectioning; dimensioning; auxiliary views; revolutions; sketching; reproduction processes; threads and fasteners. 5 Cr. (3-21).

IND 715
**MACHINE DRAFTING (8 weeks)**
Making accurate detail drawings based on complex industrial machine parts. Assembly and sub-assembly drawing based on industrial layouts. Applying close tolerance dimensioning; geometric tolerancing; true position dimensioning. Surface finish specifications which conform to industrial and military standards. 5 Cr. (3-21). *Prerequisite: IND 714.*

IND 724
**GEARS, CAMS, AND MECHANISMS (8 weeks)**
Study of power transmission, pulleys, gears, sprockets, applied with mechanisms used to create motion in machines through linkage. 5 Cr. (3-21). *Prerequisite: IND 714.*

IND 725
**SHEET METAL AND PIPING (8 weeks)**
A study of sheet metal intersections and developments; cones; transition pieces. Connection of skewed position openings with irregular shaped duct. A comprehensive study of piping systems, piping layout drawings, and basic hydraulics. 5 Cr. (3-21). *Prerequisite: IND 714.*

IND 834
**CIVIL DRAFTING (8 weeks)**
Students make and use maps. Plotting traverses from field notes; gathering surveying information; drawing contour maps. 5 Cr. (3-21). *Prerequisite: IND 714.*

IND 835
**STRUCTURAL DRAFTING (8 weeks)**
Students make shop drawings based on the original concept of a structure as conceived by the architect or engineer. Includes detailed instructions for punching, assembling, bolting, riveting, and welding. Basic types of loads and stresses are emphasized. 5 Cr. (3-21). *Prerequisite: IND 714.*

IND 844
**ARCHITECTURAL DRAFTING (8 weeks)**
Residential housing — dining rooms, bedrooms, living rooms, baths, kitchens. Identifying the components of house construction; stair layouts; doors; windows; fireplaces; structural members and loading; working drawings. 5 Cr. (3-21). *Prerequisite: IND 714.*

IND 845
**ELECTRICAL AND ELECTRONIC DRAFTING (8 weeks)**
Practical applications of drafting in the field of electrical construction — both domestic and commercial uses. House diagrams with circuit schematics, wiring diagrams and developing bills of materials. Types of electronic diagrams, symbols, reference designations and identification of essential parts. National Electric Code will be explored and applied. 5 Cr. (3-21). *Prerequisite: IND 714.*

## JOURNALISM (JOU)

JOU 111
**NEWS WRITING**
Techniques of basic news writing for print media and/or covering a news beat. Emphasis on organizing the story and rewriting to develop skills. Detailed critiques and class discussion of student writing. Introduction to use of the computerized video system of writing. 3 Cr. (3-0).

JOU 113
**PRINCIPLES OF NEWS PHOTOGRAPHY**
Introduction to photography with an adjustable camera and auxiliary equipment. Emphasis on techniques for producing news photos in black and white — lighting, imaginative posing, action. Course assumes no previous experience. Students must furnish camera. 3 Cr. (2-3).

JOU 121
**REPORTING PUBLIC AFFAIRS**
Development of news writing skills through class assignments and news beat coverage. Emphasis on deadlines and tight thorough writing. Focus on public events reporting in practicum and in the field. 3 Cr. (3-0). *Prerequisite: JOU 111.*

JOU 122
**INTRODUCTORY NEWSPAPER PRODUCTION**
Beat reporting and writing for student publications and/or the College's information services under deadline pressure. Includes basics of mechanical production and publication planning. Continued use of computerized video writing. 2 Cr. (0-6). *Prerequisite: JOU 111.*

JOU 231
**FEATURE WRITING**
Surveys structure of news features, "brites", color stories, and sidebars. Techniques of interviewing and researching feature stories. Writing feature stories for possible publication. 3 Cr. (3-0). *Prerequisite: JOU 111.*

JOU 232
**COPYREADING AND EDITING**
Preparing material for publication within legal and ethical standards. Judicious editing of both traditional and video copy, copyreading, headline writing, picture editing, typography, layout and planning relative to print media production. 3 Cr. (3-0). *Prerequisites: JOU 111 and JOU 121, or GCO 515, or permission of the instructor.*

JOU 233
**NEWSPAPER MANAGEMENT AND PRODUCTION**
Experience in a responsible, managerial position with student publications or in College information services. Focus on development of skill in news judgment, planning, and production. Students must have demonstrated ability to complete assignments with minimal supervision. Students must coordinate individualized instructional consultations. 2 Cr. (0-6). *Prerequisite: JOU 122.*

JOU 241
**NEWSPAPER ORGANIZATION AND COMMUNITY RESPONSIBILITY**
Problems of law, finance, personnel, promotion, technological change, and community service involved in managing and publishing newspapers in the United States. 3 Cr. (3-0). *Prerequisite: JOU 121.*

JOU 242
**INTERNSHIP**
On-the-job training with local/area media or with related business. 2 Cr. (0-6). *Prerequisites: JOU 232, JOU 233.*

## MACHINE TOOL TECHNOLOGY AND MACHINIST GENERAL (MTT)

MTT 511
**MACHINING I (8 weeks)**
Use of hand tools to produce layouts and objects by hand. Simple filing, sawing, and assembly techniques. Use of drill presses, drill sharpening; drilling to a layout, drill jigs. Producing parallel and square surfaces, shaping rectangular objects. 5 Cr. (5-15).

MTT 512
**MACHINING II (8 weeks)**
The theory of grinding tool bits: turning, facing, tape and turning, boring and thread cutting on the lathe. Practice in end milling, slab and plain milling. 5 Cr. (5-15).

MTT 521
**AUTOMATIC MACHINES (8 weeks)**
Fundamental concepts of metal removal using multi-tooling machining processes. Use and care of carbide tooling to obtain maximum effort. Emphasizes turret lathes, automatic screw machines, automatic power tapping machines. 5 Cr. (5-15).

MTT 522
**INDUSTRIAL METROLOGY (8 weeks)**
The use of precision instruments such as verniers, various types of comparators, Rockwell hardness testing, toolmakers scope. Testing for flatness of surface, surface plate work — includes the use of the sine bar, advanced blueprint reading, introduction to metric measurements, and quality control using the sampling method. 5 Cr. (5-15).

MTT 631
**TOOLING TECHNOLOGY I (8 weeks)**
Theory and practice in machining. Cutting and assembling precision die parts, layout and boring to close tolerance in jigs and fixtures. Background theory and practice in machining different types of threads; application of threads. 5 Cr. (5-15).

MTT 632
**TOOLING TECHNOLOGY II (8 weeks)**
Background theory and practice in operating numerically controlled machining center types of machines. Includes coding methods, machining of gears, terminology of gears, power transmission and indexing methods, simple, differential and helical milling. 5 Cr. (5-15).

MTT 641
**ABRASIVE MACHINING (8 weeks)**
Theory and practice in surface, cylindrical, internal, and jig grinding. Grinding threads, taps, electrical chemical grinding, and electrical discharge machining are included. 5 Cr. (5-15).

MTT 642
**HEAT TREATMENT AND CUTTER GRINDING (8 weeks)**
Theory and practice in hardening and tempering various kinds of metal. Carburizing, case hardening, annealing, normalizing, and forging of steel. Includes grinding of all types of tools and cutters. 5 Cr. (5-15).

## MATHEMATICS (MTH)

MTH 001
**ARITHMETIC**
Presents the basic concepts and skills of arithmetic to prepare students for required mathematics courses. Pre and post-tests are used to insure mastery of units covered. 3 Institutional Cr. (3-0).

MTH 002
**BASIC ALGEBRA**
Basic skills and concepts of arithmetic and algebra are presented based on the students' aptitudes and needs. Pre and post-tests are used to insure mastery of units covered. More than one semester may be required for mastery of the objectives. 3 Institutional Cr. (3-0).

MTH 101
**INTRODUCTION TO MATHEMATICS I**
Exploration of number and geometric patterns. Problem solving, mathematical recreations, flow charts, sets, logic, systems of numeration. Introduction to algebra and other selected topics. A general education course for non-mathematics or science majors. 3 Cr. (3-0). *Prerequisite: One year of high school mathematics.*

MTH 102
**INTRODUCTION TO MATHEMATICS II**
Probability, statistics, selected topics from geometry, number systems, and other selected topics. A general education course for non-mathematics or science majors. 3 Cr. (3-0). *Prerequisite: MTH 101.*

MTH 103
**COLLEGE ALGEBRA & TRIGONOMETRY I**
Properties of real numbers, basic algebraic operations, relations and functions, equations and inequalities, basic right triangle trigonometry, sine and cosine laws. Designed for general studies and technology students who need a thorough precalculus algebra background. 3 Cr. (3-0). *Prerequisite: Two years of high school algebra, and MTH 002 or MTH 105, or placement by examination.*

MTH 104
**COLLEGE ALGEBRA & TRIGONOMETRY II**
Continuation of MTH 103. Circular, trigonometric, inverse, exponential, and logarithmic functions, complex numbers, polar coordinates, determinants, systems of equations, linear inequalities and other selected topics. 3 Cr. (3-0). *Prerequisite: MTH 103 or placement by examination.*

MTH 105
**INTERMEDIATE ALGEBRA**
Skills and concepts of polynomials, equations and formulas, ratio and proportion, variation, factoring, quadratic equations, numerical trigonometry and other selected topics. For associate degree automotive students. 3 Cr. (3-0). Cannot be used to satisfy General Studies requirements. Cannot be used as an elective credit in programs requiring MTH 103. *Prerequisite: One year of high school algebra or placement by mathematics exam.*

MTH 107
**APPLIED CALCULUS**
Relations and functions, conics, limits, derivatives and integration of algebraic functions. Trigonometric functions and transcendental functions, methods of integration and applied problem solving. Excellent preparation for students who intend to sit for the Engineer in Training Examination. 3 Cr. (3-0). *Prerequisite: College algebra and trigonometry or permission of instructor.*

MTH 201
**ELEMENTARY STATISTICS I**
Introduction to frequently applied statistical methods — descriptive statistics, frequency distributions, elementary probability, binomial and normal distributions, Central Limit Theorem, statistical inference and tests of hypotheses, Chi-square and t-tests. For general studies and technology students who need a basic working knowledge of statistics. 3 Cr. (3-0). *Prerequisite: One year of high school algebra.*

MTH 202
**ELEMENTARY STATISTICS II**
Continuation of MTH 201. Emphasizes applied statistical techniques and design of experiment; Student T, Chi-square, F-tests, linear regression, correlation, and models; analysis on enumerative data; analysis of variance; non-parametric statistics. Offered regularly in the spring terms of even numbered years. 3 Cr. (3-0). *Prerequisite: MTH 201.*

MTH 204
**MATRIX ALGEBRA**
Matrices, determinants, inverse of a matrix, rank and equivalence, linear equations and linear dependence, vector spaces, linear transformations, characteristic equations of a matrix, bilinear, quadratic, and Hermintian forms. Recommended for computer science, science, and technology students. May be used as a core requirement or general elective for general studies students. Offered regularly in the spring terms of odd numbered years. 3 Cr. (3-0). *Prerequisite: Two years of high school algebra, MTH 103, or permission of instructor.*

MTH 238
**CALCULUS I**
Algebra review. Functions, limits, continuity, derivatives, velocity, rates of change, chain rule, curve sketching, related rates, maximum-minimum theorems, differentials, applications, antiderivatives. 4 Cr. (4-0). *Prerequisite: MTH 103 and MTH 104, or placement by math exam, or permission of instructor.*

MTH 248
**CALCULUS II**
Continuation of MTH 238. Emphasizes the definite integral, applications of integration, transcendental functions, techniques of integration, and other selected topics. 4 Cr. (4-0). *Prerequisite: MTH 238.*

MTH 290
**SPECIAL TOPICS IN MATHEMATICS**
By special arrangement for individuals or groups. Study of special topics, i.e., Differential Calculus, Modern Algebra, Modern Geometry. Arrangement to be made through instructor and Division Director. 1-4 Cr.

MTH 500
**TECHNICAL MATHEMATICS II**
Topics from algebra, geometry, right triangle trigonometry, and other areas. Emphasizes practical problems in the student's area of concentration. 3 Cr. (3-0). Cannot be used to satisfy math requirements for students in the General Studies Associate Degree program. *Prerequisite: MTH 710 or equivalent or permission of instructor.*

MTH 515
**GENERAL AVIATION MATHEMATICS**
Fundamental operations with common and decimal fractions, mixed numbers, square root algorithm, area, volume, ratio, signed numbers, and other selected topics. For aviation students. 3 Cr. (3-0).

MTH 710
**TECHNICAL MATHEMATICS I**
Arithmetic operations with whole numbers, common and decimal fractions, percent, basic principles of measurement, basic algebra, applied algebra, basic trigonometry, fundamentals of the metric system, and other selected topics for technical-vocational mathematics. For students in certificate programs. 3 Cr. (3-0). Placement by mathematics examinations.

## MEDICAL TERMINOLOGY (MTR)

MTR 101
**MEDICAL TERMINOLOGY I**
Introduction to medical terminology. Emphasizes etiology, symptomatology, pathology, and diagnostic procedures. 3 Cr. (3-0).

MTR 102
**MEDICAL TERMINOLOGY II**
Continuation of MTR 101. Students learn to read and understand the language of medicine. Emphasizes the meanings of root words and their combining forms. 3 Cr. (3-0). *Prerequisite: MTR 101.*

## NURSERY MANAGEMENT (NMG, OHT)

NMG 121
**NURSERY PRODUCTION I**
Nurseries and careers. Covers aspects of garden center location, layout and design and merchandising techniques. Includes nursery structures and facilities, nursery equipment, plant growth, growth habits and pruning. Nursery practices: ball and burlapping and transplanting. 3 Cr. (2-3).

NMG 126
**WOODY PLANTS II**
Continuation of OHT 115. Covers additional plants — emphasizes deciduous trees, shrubs, vines, ground covers, and their varieties and cultivars (varieties grown under cultivation). 3 Cr. (2-3). *Prerequisite: OHT 115.*

NMG 232
**NURSERY PRODUCTION II**
Nursery aspects of plant propagation. Emphasizes field and container production techniques, production schedules, nursery soil management, weed control, and cost analysis. 3 Cr. (2-3). *Prerequisite: NMG 121.*

NMG 237
**WOODY PLANTS III**
Advanced study of plant identification. Emphasizes broad leaved and narrow leaved evergreens - their varieties and cultivars. 3 Cr. (2-3). *Prerequisites: NMG 126, OHT 115.*

NMG 245
**LANDSCAPE CONSTRUCTION**
Techniques used to build landscape features. Includes the construction of patios, walks, retaining walls, fences, fountains, waterfalls, pools and steps using various materials. Establishing and maintaining lawns and plantings. Specifications, bidding and pricing of landscape jobs are also covered. 3 Cr. (1-6).

NMG 248
**LANDSCAPE MAINTENANCE**
Covers aspects of turf management and tree care (arboriculture). Establishment and maintenance of different types of turf areas. Emphasizes golf course, institutional, park, and home turf areas. Planting, climbing, guying, pruning, fertilizing, cabling, and bracing of shade trees. Stresses evaluation and care of ornamental trees. 3 Cr. (2-3).
*Prerequisites: OHT 115, OHT 239.*

NMG 249
**LANDSCAPE DESIGN**
Covers the principles and problems of landscape design. Emphasizes the effective use of plant materials in developing landscaped areas — for homes and public areas — to make them as attractive and useful as possible. Includes basic drawing and drafting principles. 3 Cr. (1-6).
*Prerequisites: NMG 126, OHT 115.*

OHT 114
**HORTICULTURE SOILS**
Study of soil texture, structure, organic matter, and plant nutrients as related to the use of lime and fertilizers. Synthetic soils and moisture-air relationships included. 3 Cr. (2-3).

OHT 115
**WOODY PLANTS I**
An introduction to the study of trees, shrubs, and vines grown in nurseries for landscape purposes. The course stresses the identification and uses of woody plants. 2 Cr. (1-3).

OHT 116
**HERBACEOUS PLANTS**
The classification, identification and general culture of perennials, bulbs, and roses. Practice in landscape use and design of flower borders. 3 Cr. (2-3).

OHT 234
**PLANT PROPAGATION**
Theory and practice of plant propagation by sexual and asexual means — applications in floriculture production, nursery production, and forestry. 3 Cr. (2-3).

OHT 239
**PLANT INSECTS & DISEASES**
The insects and diseases of horticulture crops. The nature, structure, growth habits, harmful effects, and control of insects and related forms. The most common and harmful plant diseases are studied for identification and control. 3 Cr. (2-3). *Prerequisite: BIO 111.*

OHT 246
**HORTICULTURE MECHANICS**
Operation and maintenance of horticulture equipment. Includes small gasoline engines, electric motors, electrical fans, environmental controls, and other soil working and irrigation equipment. 3 Cr. (2-3).

## ORNAMENTAL HORTICULTURE (FLR, NMG, OHT)
See FLORICULTURE and NURSERY MANAGEMENT

## PHILOSOPHY (PHL)

PHL 111
**INTRODUCTION TO PHILOSOPHICAL ANALYSIS**
Investigation of major concerns of philosophy: Meaning and Truth, Perception and External World; God, Mind and Body. 3 Cr. (3-0).

PHL 121
**ETHICS AND POLITICAL PHILOSOPHY**
Students analyze the value systems and political/social theories that shape thought and reality in society. Students examine contemporary ethical problems and the forces which reshape values and political ideas. 3 Cr. (3-0).

PHL 250
**PHILOSOPHY, SPORTS, GAMES, PHYSICAL EXERTION**
Considerations of the nature of humans and the world through the study of the interplay of mind and matter in sports, games, and physical exertion. Special emphasis on stress in physical exertion and its effects on consciousness. Applications to morality, psychology, religion, social organization. Latitude given to the pursuit of individual and group interests. Involvement by those able in physically exerting activity, such as running, swimming, cross-country skiing, weight-lifting, etc. 3 Cr. (3-0).

## PHYSICAL EDUCATION (PED)

The Physical Education requirements may be waived with permission of the Dean and the Director of Math, Science and Allied Health if the student has been in the Armed Services for at least one year of active duty or if it is determined that he/she should be excused because of age or physical condition.

PED 106
**TENNIS/BOWLING**
Tennis instruction for beginners and for those who wish to improve their skills in this lifetime sport. Instruction and practice in bowling fundamentals. Includes bowling skills, strategy, scoring and game courtesies. 1 Cr. (0-2).

PED 107
**GOLF/BOWLING**
Instruction and practice in golf skills to prepare students to play and enjoy a round of golf. Instruction and practice in bowling fundamentals. Includes bowling skills, strategy, scoring and game courtesies. 1 Cr. (0-2).

PED 121
**SOCCER/VOLLEYBALL/BASKETBALL**
Instruction in soccer and basketball stressing basic skills, strategy, player positioning and game rules. Volleyball (a large muscle activity) instruction for beginners and those who wish to improve their playing skills. 1 Cr. (0-2).

PED 122
**SOFTBALL/VOLLEYBALL/BASKETBALL**
Instruction and practice in the fundamental skills of softball. Volleyball instruction for beginners and those who wish to improve their playing skills. Instruction in basketball stressing basic skills, strategy, player positioning and game rules. 1 Cr. (0-2).

PED 123
**FOOTBALL/VOLLEYBALL/BASKETBALL**
Instruction in touch football and volleyball (large muscle activities) for those who wish to learn or improve skills. Instruction in basketball stressing basic skills, strategy, player positioning and game rules. 1 Cr. (0-2).

PED 124
**BASKETBALL/VOLLEYBALL**
Instruction in basketball stressing basic skills, strategy, player positioning and game rules. Volleyball (a large muscle activity) instruction for beginners and those who wish to improve their playing skills. 1 Cr. (0-2).

PED 125
**WEIGHT TRAINING/VOLLEYBALL/SOFTBALL**
A progressive developmental program using the Universal Gym in either a 70 percent muscle building category (male) or a 50 percent muscle toning category (female). May include a cardio-vascular efficiency program in jogging, rope jumping or running in place. Volleyball (large muscle activity) instruction for beginners and those who wish to improve their playing skills. Instruction and practice in the fundamental skills of softball. 1 Cr. (0-2).

PED 141
**ARCHERY/VOLLEYBALL**
Field archery is a fundamental course in target shooting emphasizing accuracy at close ranges. Volleyball (large muscle activity) instruction for beginners and those who wish to improve playing skills. 1 Cr. (0-2).

PED 142
**BADMINTON/VOLLEYBALL**
Instruction in the fundamental skills of badminton (a lifetime sport). Volleyball (large muscle activity) instruction for beginners and those who wish to improve their playing skills. 1 Cr. (0-2).

PED 143
**WEIGHT TRAINING/VOLLEYBALL**
A progressive developmental program using the Universal Gym in either a 70 percent muscle building category (male) or a 50 percent muscle toning category (female). May include a cardio-vascular efficiency program in jogging, rope jumping or running in place. Volleyball (large muscle activity) instruction for beginners and those who wish to improve their playing skills. 1 Cr. (0-2).

PED 144
**WEIGHT TRAINING/GOLF**
A progressive developmental program using the Universal Gym in either a 70 percent muscle building category (male) or a 50 percent muscle toning category (female). May include a cardio-vascular efficiency program in jogging, rope jumping or running in place. Instruction and practice in golf skills to prepare students to play and enjoy a round of golf. 1 Cr. (0-2).

PED 145
**ADAPTED P.E./WEIGHT TRAINING**
An individualized course designed to meet the specific needs of the student with a physical handicap. Depending upon handicap, program may include a combination of appropriate individual sports and/or a self-development program such as Hatha Yoga or progressive general exercise. Weight training is a progressive developmental program using the Universal Gym in either a 70 percent muscle building category (male) or a 50 percent muscle toning program (female). May include a cardio-vascular efficiency program in jogging, rope jumping or running in place. 1 Cr. (0-2).

PED 146
**BOWLING/PHYSICAL FITNESS**
Instruction and practice in bowling fundamentals. Includes bowling skills, strategy, scoring and game courtesies. An individualized program to raise the student's level of physical fitness. The program may include exercise, jogging, bicycling, aerobic dance or weight training. 1 Cr. (0-2).

PED 147
**JOGGING/PHYSICAL FITNESS**
An individualized program of running designed to accommodate each student's needs and goals. An individualized program to raise the student's level of physical fitness. The program may include exercise, jogging, bicycling, aerobic dance or weight training. 1 Cr. (0-2).

PED 162
**GOLF**
Instruction and practice in golf skills to prepare students to play and enjoy a round of golf. 1 Cr. (0-2).

PED 163
**GYMNASTICS**
Instruction in movement skills, combinations and sequences in free exercise, tumbling and on gymnastic apparatus. 1 Cr. (0-2).

PED 164
**INSTRUCTIONAL SWIMMING**
Designed to equip the non-swimmer with the basic water safety skills and knowledge needed for safety when in or near water. 1 Cr. (0-2).

PED 165
**LIFESAVING**
Covers knowledge and skills needed to meet the requirements for certification in American Red Cross Advanced Lifesaving. 2 Cr. (1-2).

PED 166
**RACQUETBALL**
Instruction for beginners and for those who wish to improve skills in this lifetime activity. 1 Cr. (0-2).

PED 167
**ROLLER SKATING**
Instruction and practice in the fundamental skills needed to enjoy this sport. 1 Cr. (0-2).

PED 168
**YOGA**
Hatha Yoga is a self-discipline designed to increase the efficiency of all body systems. It stresses the reality of self-awareness and introduces relaxation as a way of life. The course stresses the practicing of asanas (postures) and the techniques for complete breathing and total body relaxation. 1 Cr. (0-2).

PED 169
**AEROBIC DANCE**
A vigorous physical fitness course combining locomotive movements for cardiovascular endurance, exercise for muscle tone and flexibility and basic dance steps for rhythmical development and coordination. The sequences are performed to a variety of musical scores. 1 Cr. (0-2).

PED 170
**CANOEING**
Canoe safety, equipment, basic paddling techniques, and reading river conditions. 1 Cr. (0-2)

PED 201
**PERSONAL AND COMMUNITY HEALTH**
Discussions of up-to-date relevant information concerning personal and community health problems of today's college students. 2 Cr. (2-0).

PED 202
**RED CROSS STANDARD FIRST AID**
This course will cover the material of the "Standard First Aid and Personal Safety Program" and the "Basic Life Support Course in Cardiopulmonary Resuscitation" as set up by the American National Red Cross. It is an intermediate-level first aid course. 2 Cr. (2-0).

## PHYSICS (PHS)

PHS 100
**PHYSICS—MECHANICS**
Lecture, demonstrations. Problem-solving course in elementary mechanics; basic concepts of scientific method; the metric systems; vectors, translatory motion; rotary motion, work, power, energy; physical properties of liquids, solids, gases. 4 Cr. (3-3). *Prerequisites: MTH 103 or equivalent. MTH 104 background is desirable and we recommend it be taken prior to or concurrent with PHS 100.*

PHS 101
**PHYSICS—HEAT AND LIGHT**
Basic principles of heat and its measurements: thermometry, calorimetry, expansion of liquids, solids, and gases, transfer of heat. Light includes refraction, illumination, optics and color. 4 Cr. (3-3). *Prerequisite: MTH 103 or equivalent. PHS 100 is recommended.*

PHS 102
**PHYSICS—ELECTRICITY AND MAGNETISM**
Fundamental concepts of electrostatics, electrolysis; AC and DC circuits, magnetism; electromagnetic induction. Basic principles of electricity. 4 Cr. (4-0). *Prerequisite: PHS 100.*

PHS 106
**INTRODUCTION TO METALLURGY**
Introduction to physical metallurgy; chemical composition, crystallization. Effects of mechanical treatment: drawing, rolling, shaping; thermal or heat treatment. 4 Cr. (4-0). *Prerequisite: PHS 100 is recommended.*

PHS 112
**INTRODUCTORY PHYSICS**
Fundamental laws and properties of matter, mechanics, heat and light. Emphasizes electricity and magnetism. 4 Cr. (3-3). *Prerequisite: High school algebra.*

PHS 116
**GENERAL PHYSICS I**
Principles of mechanics and heat. Calculus is used when it leads to a more direct solution of problems. 4 Cr. (3-3). *Corequisite: MTH 238.*

PHS 122
**RADIATION PHYSICS**
The fundamentals of electrical and radiation physics and the principles underlying the operation of x-ray equipment and auxiliary devices. 3 Cr. (3-0). *Prerequisite: PHS 112.*

PHS 126
**GENERAL PHYSICS II**
Continuation of PHS 116. Principles of electricity, magnetism, wave motion, optics and sound. 4 Cr. (3-3). *Prerequisite: PHS 116. Corequisite: MTH 248.*

PHS 202
**MECHANICS**
Intermediate course in kinematics and dynamics. Differential and integral calculus are used extensively in derivations and problems. 4 Cr. (3-3). *Prerequisites: PHS 126 and MTH 248.*

PHS 236
**MODERN PHYSICS**
Atomic and nuclear physics. Includes structures of atom and nucleus, radioactivity; fission and fusion; relativity; and the periodic table of elements. 4 Cr. (3-3). *Prerequisites: PHS 126 and MTH 248.*

PHS 500
**PHYSICS SURVEY**
Covers most of the following topics — selected to meet the needs of the majority of students in any particular section — matter and measurement; behavior of solids, liquids, and gases; mechanics, including forces, motion, energy, power, and machines; heat; sound; light; optics; magnetism; electricity; atomic phenomena. 3 Cr. (3-0). *Prerequisite: MTH 710 or equivalent.*

## PLUMBING AND HEATING (PLH)

PLH 711
**BASIC PLUMBING (First 8 weeks)**
Correct use of hand and power tools used in the plumbing trade. Methods of joining various types of pipe used in plumbing systems. Provides working knowledge of drain-waste-vent systems recognized by the National Standard Plumbing Code. 6 Cr. (6-18).

PLH 712
**ADVANCED PLUMBING SKILLS (Second 8 weeks)**
Installation and repair of potable water systems used in residential construction. Identifying components of residential plumbing fixtures. Instruction in the installation and repair of water heaters, kitchen and bathroom fixtures and well pumps. Covers the National Plumbing Code as it relates to residential potable water and drainage systems. 6 Cr. (6-18). *Prerequisite: PLH 711.*

PLH 721
**PLUMBING SYSTEMS AND BLUEPRINTS (First 8 weeks)**
Introduction to commercial blueprint reading and isometric pipe sketching. Material estimates and ordering. Installation and repair of commercial fixtures; design and construction of cooperative group projects; specialty plumbing includes systems for hospitals and handicapped. 6 Cr. (6-18). *Prerequisite: PLH 712.*

PLH 722
**ADVANCED SYSTEM AND CODES (Second 8 weeks)**
Introduction to commercial blueprint reading and isometric pipe welding sketching; material estimates and ordering; installation and repair of residential fixtures; design and construction of individual projects. 6 Cr. (6-18). *Prerequisite: PLH 712.*

PLH 832
**HOT WATER - HEAT CONSERVATION (Second 8 weeks)**
Basic skills needed to lay out, size and install various hydronic hot water systems and hot air for residential and commercial installations. Gas, oil, coal, wood, and combination fuel fired systems. 6 Cr. (6-18). *Prerequisite: PLH 833.*

PLH 833
**HEAT LOSS CALCULATIONS - PIPE WELDING (First 8 weeks)**
Basic skills required to calculate heat loss for residential and commercial installation; energy conservation. Practice in calculating, designing, and laying out hot water heating systems. Introduction to acetylene welding, cutting and electric arc pipe welding. Short unit on lead repair work. 7 Cr. (8-16). *Prerequisite: PLH 722.*

PLH 841
**STEAM HEAT AND PIPEFITTING (First 8 weeks)**
Basic skills needed to lay out, size and install residential and commercial steam heat systems, boilers and trim. Emphasizes combustion efficiency testing and oil burner service and repairs. Practical experience stresses advanced piping. 6 Cr. (6-18). *Prerequisites: PLH 832, PLH 833.*

PLH 842
**FIELD WORK AND ADVANCED SKILLS (Second 8 weeks)**
On-the-job work experience using trade skills acquired in previous courses. Emphasizes layout, roughing-in, and finish operations. Coordination among the trades, cooperation and on-the-job attitudes are stressed. Depending on job commitments, course may include instruction in such related skills as sheet metal, overhead welding and alternate heat sources. This course may be completed on a Cooperative Education basis. 6 Cr. (6-18). *Prerequisites: PLH 711, PLH 712, PLH 721, PLH 722, PLH 832, PLH 833, PLH 841.*

## PRACTICAL NURSING (NUR)

NUR 710
**FOUNDATIONS OF NURSING**
Basic nursing knowledge. Skills common to all areas of nursing practice. Emphasizes the basic needs of patients, using individual patient situations. Includes physical hygiene, comfort, rest, nutrition. The process of developing, implementing, and evaluating nursing care plans is studied and used in patient care. Includes mental health concepts, rehabilitation needs, communication skills, drug preparation and administration, body mechanics, safety practice and basic concepts of asepsis. 12 Cr. (6-18).

NUR 711
**NURSING RELATIONSHIPS**
Orientation to the program. The learning process; communication skills; concepts of health; major health problems and agencies; trends in nursing; roles and characteristics of nurses; nursing organizations; legal and religious implications. Range and scope of the nurse's functions; lines of administrative authority. Fundamentals of ethical, psychological, social and human relationships. 3 Cr. (3-0).

NUR 712
**SCIENTIFIC PRINCIPLES RELATING TO NURSING**
The location, description, and function of gross anatomical structures. Common pathogens, their characteristics and methods of control; common elements found in the body and their relation to the body in health; the relation of physical properties to the functioning body; the process of metabolism and homeostasis. Psycho-social and economic factors related to nutrition and dietary patterns, nutritional needs — at all ages and under various conditions — the relation of nutrition to health; associated vocabulary. 6 Cr. (6-0).

NUR 723
**MEDICAL-SURGICAL NURSING—ELEMENTARY (15 weeks)**
Principles of patient care. Includes general medical and surgical conditions. Emphasizes the needs of the adult patient; the causes, treatment, and the prevention of illness; the nursing care involved. The student will be expected to function progressively as a contributing member of the nursing team, and to develop and carry out patient centered care plans geared to patient needs. Students acquire additional skills in nursing procedures. 9 Cr. (6-18). (15 weeks-lecture/7 weeks-lab). *Prerequisite: NUR 710, NUR 711 and NUR 712.*

NUR 724
**PARENTAL AND CHILD HEALTH (15 weeks)**
Focuses on the concept of the family as a social unit. Helps prepare students for patientside experiences with prenatal, intrapartum and postpartum mothers, and the well and ill child. Includes growth and development, history, current trends, and community agencies in parental and child health. Deviations from normal are considered, but the emphasis is on normal aspects. The student participates in the care of these individuals. 9 Cr. (6-18). (15 weeks-lecture/8 weeks-lab). *Prerequisite: NUR 710, NUR 711 and NUR 712.*

NUR 735
**MEDICAL-SURGICAL NURSING—INTERMEDIATE (15 weeks)**
Continuation of NUR 723. Develops knowledge and skills to prepare students to provide nursing care which meets the needs of patients of all ages with major health problems. Development of skills in assisting with critically ill, unconscious, moribund and mentally ill patients. 18 Cr. (12-18). *Prerequisites: NUR 723 and NUR 724.*

NUR 736
**PRACTICUM**
Students are assigned to the cooperating institutions for three weeks to further develop skills in nursing procedures and patient care. 2 Cr. (0-75). *Prerequisite: NUR 735.*

## PSYCHOLOGY (PSY)

PSY 111
**GENERAL PSYCHOLOGY**
Introduction to the science of human behavior and mental processes. Students examine the relation between the nervous system and behavior, learning, perception, language, personality, intelligence and psychopathology. 3 Cr. (3-0).

PSY 201
**ABNORMAL PSYCHOLOGY**
Principal forms of mental and emotional disorders with emphasis on their causes, symptoms, and courses of treatment. By examining distorted or exaggerated behavior, students develop a clearer sense of normal behavior. 3 Cr. (3-0). *Prerequisite: PSY 111 or permission of the instructor.*

PSY 203
**DEVELOPMENTAL PSYCHOLOGY**
Psychological development and change throughout the life span. Emphasizes principles of child and adolescent development, genetic and environmental influences on the course of physical, motor, intellectual, emotional, social, and personality development. 3 Cr. (3-0). *Prerequisite: PSY 111 or permission of the instructor.*

PSY 231
**EDUCATIONAL PSYCHOLOGY**
Psychological principles and concepts applied to learning. Students explore intelligence and intelligence testing, cognitive development, learning and memory, creativity, language and other relevant topics. These are applied to practical educational problems. 3 Cr. (3-0). *PSY 111 is recommended as a prerequisite.*

PSY 241
**SOCIAL PSYCHOLOGY**
Interaction of individuals in groups. Harmony and conflict within groups as well as between groups, group leadership and group controls, phenomena of imitation and suggestion. 3 Cr. (3-0). *Prerequisite: Permission of the instructor.*

PSY 290
**SPECIAL STUDIES IN PSYCHOLOGY**
Special attention to particular abilities and interests of students. Individual guidance in advanced studies. Admission by permission of the instructor. 1-3 Cr. (1 to 3-0).

## RADIOLOGIC TECHNOLOGY (RAD)

RAD 110
**RADIOLOGIC TECHNOLOGY I**
Basic concepts of ethical principles and medical structure. Chemical aspects of processing a radiographic film and efficient darkroom (processing) procedures. Theoretical and practical instruction in the radiographic positioning of body structure and organs. Manipulation of exposure factors pertaining to milliamperage, kilovolts, distance, and time. 5 Cr. (3-13).

RAD 120
**RADIOLOGIC TECHNOLOGY II**
Theory of x-ray technique. Necessity of different radiographic views to avoid superimposition of structure. The involvement of contrast media in relation to reactions, and contraindications to these media. Emphasizes nursing procedures as they relate to radiology. 7 Cr. (4-16). *Prerequisite: RAD 110.*

RAD 200
**SUMMER INTERNSHIP**
Required internships establish eligibility for registry examination. Internships are arranged with affiliated hospitals. 0 Cr.

RAD 230
**RADIOLOGIC TECHNOLOGY III**
Students create a working combination -- or establish a new combination -- of exposure factors using x-ray components to produce an interpretive film. Advanced positioning of special radiographic views to demonstrate various anatomical parts. Introduces the operating suite in relation to medical aseptic technique and radiographic procedures. Emphasizes technical special radiographic procedures. 10 Cr. (5-15). *Prerequisite: RAD 120.*

RAD 240
**RADIOLOGIC TECHNOLOGY IV**
Organization, supervision, law, and finance related to radiology. Emphasizes handling diseased and injured patients. Introduces the role of radiation therapy in treatment of disease, effects on body tissue, and the methods of radiation therapy. Basic concepts of scientific research. 10 Cr. (5-15). *Prerequisite: RAD 230.*

## REAL ESTATE (RES)

RES 112
**REAL ESTATE FUNDAMENTALS**
This course is an introduction to the field of real estate. It emphasizes the legal aspects of real property ownership and lease arrangements and the instruments commonly used in property transactions. The functions performed by both the real estate broker and the salesperson and the procedures used are included. Real estate law, as it pertains to real estate transactions and the licensing law, is covered. This course can be applied toward the salesperson's license. 3 Cr. (3-0).

RES 113
**REAL ESTATE LAW**
This course covers the legal aspects of buying, selling, and holding real estate. This course can be used for the salesperson's license. 3 Cr. (3-0). *Prerequisite: RES 112 or Division permission.*

RES 114
**REAL ESTATE APPRAISAL**
Elementary principles and practices of appraising residential real estate, with in-depth study of the three approaches used to arrive at estimated value. 3 Cr. (3-0). *Prerequisite: RES 112 or Division permission.*

RES 115
**REAL ESTATE PRACTICE**
The purpose of this course is to help students develop and learn to apply the skills needed to sell real estate. Students taking this class will learn a great deal about interpersonal relationships -- how people act, react, and interact with each other. Students will also be required to practice (in the classroom) the skills they learn. Emphasizes the practical aspects of selling -- how to fill out a contract -- and less tangible aspects -- how to go about getting buyers and sellers to the stage where they are willing to fill out a contract. 3 Cr. (3-0). *Prerequisite: RES 112 or Division permission.*

RES 116
**REAL ESTATE FINANCING**
This course will prepare the average real estate salesperson to put together a money package to successfully close a deal. The course will also acquaint students with sources of funds available and the methods and regulations involved in purchasing, selling, or acting as an agent to sell real estate. 3 Cr. (3-0). *Prerequisite: RES 112 or Division permission.*

RES 117
**REAL ESTATE MANAGEMENT**
This course introduces the student to the basic managerial theories and strategies related to the real estate field. This course can be used for the real estate broker's license. 3 Cr. (3-0). *Prerequisite: RES 112 or Division permission.*

RES 119
**REAL ESTATE MATH**
This course covers the basic mathematics used by real estate professionals. Course credits can be applied only toward the broker's license. However, the subject matter covered is ideal as a review for individuals taking the salesperson's exam. 3 Cr. (3-0). *Prerequisite: RES 112 or Division permission.*

RES 120
**REAL ESTATE TAXES**
This course will emphasize the basic tax structure in our economy as it relates to the real estate field. This course can be used for the salesperson's and broker's license. 3 Cr. (3-0). *Prerequisite: RES 112 or Division permission.*

RES 212
**REAL ESTATE PRINCIPLES**
This course is a more advanced in-depth study of the principles of financing, transferring property, contracts and various types of ownership as they relate to real estate. This course can be used for both the salesperson's and broker's license. 3 Cr. (3-0). *Prerequisite: RES 112 or Division permission.*

See page 79 for information on the Real Estate sale's and broker's examinations.

## RETAIL MANAGEMENT (MKT)

MKT 233
**RETAIL PRINCIPLES**
Designed to familiarize students with the field of retailing. Provides the technical and theoretical knowledge necessary for retail management jobs. 3 Cr. (3-0).

MKT 240
**MARKETING**
This course illustrates various methods of merchandising and the channel of distribution from producer or manufacturer to the consumer. Government regulations, pricing, cost and branding, influence of buyers and consumers on marketing programs and current marketing trends are presented. 3 Cr. (3-0).

MKT 243
**SALES**
Examines the positive role personal selling plays in the American economy and documents the extent to which "sales" has aided in our economic growth. This course is designed to show the role of selling in helping customers recognize and satisfy wants and needs and explains how this satisfaction can lead to a higher standard of living. 3 Cr. (3-0).

MKT 245
**FASHION MERCHANDISING AND DISPLAY**
Designed to familiarize students with the field of fashion merchandising. Provides the technical and theoretical knowledge necessary for fashion management. Includes three laboratory hours per week during which students work on window displays and fashion design. 4 Cr. (3-3).

MKT 247
**RETAIL MANAGEMENT**
Continues to build students' knowledge of the activities needed to make a retail business succeed. Emphasizes quantitative analysis of management problems and information systems through electronic data processing. Retailing is studied from the viewpoint of a middle manager in a larger retail firm and as it applies to owners of retail establishments. 3 Cr. (3-0).

## SECRETARIAL SCIENCE (CLS, SEC)

CLS 717
**CLERICAL PROCEDURES**
Office procedures and management of general office work. Includes handling mail, filing, reception work, office machines, office communication systems, spelling, vocabulary. Development of personal qualities necessary for success, self-evaluation, good work habits and attitudes, and personality development. 7 Cr. (5-6).

CLS 728
**CLERICAL WORKSHOP**
Includes instruction in typing reports, office forms, statistics, production work, payroll procedures, machine calculation, and word processing equipment. Use of the common types of duplicating equipment. Students will become familiar with commonly used dictation and transcription equipment. Practice office assignments and situations are included. 8 Cr. (6-6). *Prerequisites: CLS 717, SEC 111.*

SEC 111
**TYPEWRITING I**
Develops basic typing skills. Includes introduction to the typewriter; development of touch typewriting; development of speed and accuracy; introduction to business letters, memos, and tabulations; development of proper attitudes. Taught in the Individualized Learning Center, which permits the student to proceed at his/her own pace, moving from lesson to lesson as skills are mastered. 3 Cr. (2-3).

SEC 114
**SHORTHAND I**
Basic theory and techniques of Gregg Shorthand, Diamond Jubilee Series. Emphasizes outlines, proper techniques, and attainment of fluency in reading and writing shorthand. Dictation is given at 60+ words per minute for three minutes, to be transcribed with a 95+ percent level of accuracy. 3 Cr. (2-3).

SEC 121
**TYPEWRITING II**
Advances the student's ability in typewriting. Emphasizes production typing, tabulation, special skill techniques, advanced letter writing, forms and documents, and other routine typewriting duties. Taught in the Individualized Learning Center, which permits the student to proceed at his/her own pace, moving from lesson to lesson as skills are mastered. 3 Cr. (2-3). *Prerequisite: SEC 111. Students may also qualify by passing the appropriate test.*

SEC 124
**SHORTHAND II**
Continuation of SEC 114. Emphasizes the development of skills in taking dictation and transcription. Typewritten transcription is included. Dictation is given at 80+ words per minute for three minutes, to be transcribed with a 95+ percent level of accuracy. 3 Cr. (2-3). *Prerequisites: SEC 111 and SEC 114. Students may also qualify by passing the appropriate test.*

SEC 129
**SECRETARIAL PROCEDURES**
Introduction to the responsibilities and the opportunities of the secretarial field. Emphasizes administrative aspects of secretarial work. Includes office forms, mailing operations, filing, communications, business machines, duplicating processes, and dictating and transcribing machines. 3 Cr. (2-3). *Prerequisite: SEC 111. Students may also qualify by passing the appropriate test.*

SEC 231
**TYPEWRITING III**
Designed for the typist with a sustained high level, accurate straight-copy speed. Provides an opportunity to master basic typing formats, to review and apply technical information, and to develop creativity and originality. Taught in the Individualized Learning Center, this course includes higher levels of typing — following directions, editing copy, composing letters, creating arrangements of tables — and other involved typewriting projects which the student will master at his/her own pace. 3 Cr. (2-3). *Prerequisite: SEC 121. Students may also qualify by passing the appropriate test.*

SEC 234
**SHORTHAND WORKSHOP**
Intensive review of advanced Gregg Shorthand with emphasis on executive, legal, or medical vocabulary. Dictation is given at 100+ words per minute for three minutes, to be transcribed with a 95+ percent level of accuracy. Students are given intensive training in the transcription of letters and specialized forms. Development of supplemental skills necessary for secretarial responsibilities is emphasized. 6 Cr. (4-6). *Prerequisite: SEC 124.*

SEC 244
**SECRETARIAL WORKSHOP**
Integrates all phases of advanced dictation, transcription, and secretarial skills. Dictation is given at 100+ words per minute for three minutes, to be transcribed with a 98+ percent level of accuracy. Includes intensive office-level practice. 8 Cr. (5-9). *Prerequisite: SEC 234.*

SEC 245
**OFFICE INTERNSHIP**
Practical experience through work assignments in offices. 1 Cr. (0-5).

SEC 509
**TYPEWRITING**
For non-business students. Includes touch typewriting, speed and control, familiarization with business letters, memos, reports, and personal typing. Taught in the Individualized Learning Center, which permits the student to proceed at his/her own pace, moving from lesson to lesson as skills are mastered. 1 Cr. (0-3).

## SERVICE AND OPERATION OF HEAVY CONSTRUCTION EQUIPMENT (SOE)

SOE 713
**SERVICE AND OPERATION I (8 weeks)**
Introduction to heavy equipment mechanics. Begins with basic tools, micrometers and lifting equipment. Includes complete engine nomenclature (terms used to describe parts of the engine) and engine overhaul. 7 Cr. (7-18).

SOE 714
**SERVICE AND OPERATION II (8 weeks)**
Basic vehicle electrical systems. Includes electro-magnetism, ignition circuits, starting circuits, and electric troubleshooting. 7 Cr. (7-18).

SOE 725
**SERVICE AND OPERATION III (8 weeks)**
Introduction to the maintenance and repair of various types of clutches, gear type transmissions, and differentials. Maintenance of seals and anti-friction bearings. 7 Cr. (8-17).

SOE 726
**SERVICE AND OPERATION IV (8 weeks)**
Introduction to the maintenance and repair of final drives, undercarriages, tracks, and tires. Maintenance and repair of brake systems. 7 Cr. (8-17).

SOE 837
**SERVICE AND OPERATION V (8 weeks)**
Introduction to the various types of hydraulic systems used on heavy construction equipment. Includes pumps, motors, valves, cylinders, etc. 7 Cr. (8-17).

SOE 838
**SERVICE AND OPERATION VI (8 weeks)**
Introduction to the service, repair, testing, and troubleshooting of torque converters and power shift transmissions. Introduction to the hydrostatic transmission. Testing hydrostatic transmissions. Advanced electrical circuits and troubleshooting. 7 Cr. (8-17).

SOE 847
**SERVICE AND OPERATION VII (8 weeks)**
Introduction to basic construction surveying, construction blueprint reading, and grade stake reading. Operating various types of heavy construction equipment — dozers, loaders, motor graders, and scrapers. Service of machines operated. 6 Cr. (6-19).

SOE 848
**SERVICE AND OPERATION VIII (8 weeks)**
A continuation of SOE 847. Emphasizes developing skills as an equipment operator or mechanic. 6 Cr. (6-19).

## SIGN PAINTING (SIG)
Not offered in 1983-84

SIG 711
**SIGN PAINTING I**
Introduction to sign painting as related to the basic alphabet, the drawing alphabet and the fundamentals of alphabets. Use, care, and understanding of sign painting tools and materials. Emphasis on the development of skill with a variety of brushes. 10 Cr. (3-22).

SIG 721
**SIGN PAINTING II**
Emphasis on laying out and painting paper signs and showcards. Instruction in commercial signs, truck and window lettering is provided. Use of tempera and bulletin colors is covered. 10 Cr. (3-22).

SIG 811
**SIGN PAINTING III**
During the advanced phase, billboard lettering, commercial signs and pictorial work are covered. Use of bulletin colors and lettering quills is introduced in this segment of instruction. 10 Cr. (3-22).

SIG 821
**SIGN PAINTING IV**
Designed to allow the student to continue practicing showcard layout and commercial signs. Gold leaf applications, glass, and surface gilding are covered. 10 Cr. (3-22).

## SMALL ENGINE REPAIR (SER)
Courses offered at Lewisburg Federal Penitentiary.

SER 711
**SMALL ENGINE REPAIR (12 weeks)**
The Small Engine Repair course is designed to give the individual a saleable skill in the field of small engine repair. Repair and maintenance of engines commonly used in lawn mowers, boat motors, snowmobiles, chain saws, and others in this classification are covered. 14 Cr. (10-25).

## SOCIOLOGY (SOC)

SOC 111
**INTRODUCTION TO SOCIOLOGY**
An introduction to the basic concepts and methods used in studying the group life of human beings. Students analyze forces which shape social practice and norms and explore alternative social practices. 3 Cr. (3-0).

SOC 112
**GENERAL ANTHROPOLOGY**
Survey of the physical and cultural evolution of humans and society. Emphasizes the relationship of the human physical structure to behavior and comparative descriptions of recent primitive societies. 3 Cr. (3-0).

SOC 121
**INTRODUCTION TO SOCIAL WORK**
Basic concepts of social welfare programs, social case work, and field work. Especially designed for students planning a career in social work. 3 Cr. (3-0). *Prerequisite: SOC 111.*

SOC 231
**MARRIAGE AND THE FAMILY**
Examination of traditional and contemporary American marital and family relationships. Students examine expectations, roles, and values in various marriage and family patterns and explore forces promoting change. 3 Cr. (3-0). *Prerequisite: SOC 111 or permission of the instructor.*

SOC 241
**URBAN SOCIOLOGY**
The concept of community as it operates and affects individual and group behavior in rural, suburban, and urban settings. Emphasizes characteristic institutions and problems of modern city life. 3 Cr. (3-0). *Prerequisite: SOC 111.*

SOC 242
**CRIMINOLOGY**
The social relationships and situations involved in the causes and prevention of crime and juvenile delinquency. Particular emphasis on the functioning of the U.S. criminal justice system. 3 Cr. (3-0). *Prerequisite: SOC 111.*

SOC 290
**SPECIAL STUDIES IN SOCIOLOGY**
Special attention to particular abilities and interests of students. Individual guidance in advanced studies. Admission by permission of the instructor. 1-3 Cr. (1 to 3-0).

## SPANISH (SPA)

SPA 111
**BEGINNING SPANISH I**
Basic grammar and language structure. Comprehension, speaking and reading. Emphasizes pronunciation and accent. 3 Cr. (3-0).

SPA 121
**BEGINNING SPANISH II**
Continuation of SPA 111. 3 Cr. (3-0). *Prerequisite: SPA 111.*

## SURGICAL TECHNOLOGY (SRT)

SRT 110
**PRINCIPLES OF SURGICAL TECHNOLOGY I**
A study of the surgical process including aspects of the operating room environment; patient care and the practice of surgery; medications used during surgery; pre, intra and post-operative techniques of surgery; micro-organisms and how they affect the human body; the physical, spiritual, psychological needs and medico-legal rights of the patient. 12 Cr. (9-9).

SRT 120
**PRINCIPLES OF SURGICAL TECHNOLOGY II**
An in-depth study of the various surgical specialties and associated surgical procedures. Anatomy and physiology and the disease conditions of the body will be reviewed. 4 Cr. (4-0). *Prerequisites: SRT 110, BIO 110, MTR 101.*

SRT 121
**CLINICAL SURGICAL TECHNOLOGY**
Application of lecture and laboratory materials in the hospital surgical suite to gain practical experience in general and specialty surgical procedures. In-depth study in procedures, instrumentation and equipment. 10 Cr. (2-24). *Prerequisites: SRT 110, BIO 110, MTR 101.*

## TOOL DESIGN TECHNOLOGY (TDT)

TDT 231
**TOOL DRAFTING (8 weeks)**
Transition between mechanical drafting and tool design; drawings, techniques; purchased parts; standards of shop drawings; material lists; designing cutting tools. 4 Cr. (4-12). *Prerequisite: EDT 101 or EDT 111.*

TDT 232
**FIXTURE DESIGN (8 weeks)**
Designing leaf and tumble jigs, plain and index milling fixtures, vise jaws, chuck jaws, lathe fixtures, and adaptor plates. 4 Cr. (4-12). *Prerequisite: TDT 231.*

TDT 241
**GAGE DESIGN AND PROGRAMMING (8 weeks)**
Writing programs for point to point and contouring tape controlled machines. Design of plug, snap, ring, flush pin depth, length, and indicating gages. 4 Cr. (4-12). *Prerequisite: EDT 101 or EDT 111.*

TDT 242
**DIE DESIGN (8 weeks)**
Designing cutting, forming, drawing, and cavity dies; simple, progressive and compound arrangements. 4 Cr. (4-12). *Prerequisite: EDT 101 or EDT 111.*

## WELDING (WEL)

WEL 701
**ACETYLENE WELDING**
Basic acetylene welding for plumbing students. 2 Cr. (0-5).

WEL 703
**ELECTRIC WELDING**
Selected units in basic electric welding for plumbing students. 2 Cr. (0-6).

WEL 712
**ACETYLENE WELDING**
Theory and practice in welding sheet metal and mild steel plate; oxyacetylene cutting; pipe welding, welding and brazing ferrous and nonferrous metals; weld testing; shop safety. 13 Cr. (7-18).

WEL 722
**ELECTRIC WELDING**
Principles and applications of basic electric welding. The use of various types of electrodes for welding steel plate in all positions, pipe welding; cast iron welding, weld testing. 13 Cr. (7-18).

WEL 832
**INERT GAS WELDING**
Theories and practice in manual inert gas shield techniques (TIG) and in the short arc, high speed, semi-automatic, metallic arc process (MIG). 13 Cr. (7-18).

WEL 842
**WELDING (ADVANCED)**
Practical theory and application of weldments to meet specifications of AWS, API and ASME codes. All position welding of heavy plate and pipe; testing and weld specimens. 13 Cr. (7-18).

## WOOD PRODUCTS TECHNOLOGY (WPT)

WPT 111
**WOOD PROPERTIES AND UTILIZATION**
Physical characteristics, identification and use of wood. Includes machining and manufacturing major wood products derived from commercially important species. 3 Cr. (2-3).

WPT 121
**LUMBER AND LOG GRADING**
Separating and grading (sorting wood on the basis of quality) hardwood and softwood lumber according to wood industry standards. Sorting hardwood and softwood logs on the basis of lumber grade to assure high quality lumber products. 3 Cr. (1-6).

WPT 122
**SAWMILLING I**
Identification and layout of major parts of a sawmill. Maintenance and safe operation of the equipment used to saw logs into lumber. 3 Cr. (1-6).

WPT 123
**LUMBER DRYING**
The process of drying lumber by natural or artificial methods. Includes layout of the lumber yard, dry kiln operation, and the handling and storage of green lumber. 3 Cr. (2-3).

WPT 231
**WOOD INDUSTRY CO-OP/INTERNSHIP**
Practical experience in a planned, supervised program of work in a wood products industry. 3 Cr. (200 Hr.)

WPT 232
**SAWMILLING II**
A continuation of Sawmilling I. Emphasizes practical skills in sawing lumber to grade in a safe and economical manner. 3 Cr. (1-6).

WPT 233
**QUALITY CONTROL**
The characteristics of selected sawmill products — air and kiln dry products, veneer and plywood, composition board, furniture and cabinetry, and chemically treated wood products. Includes the methods and equipment used to measure these characteristics and quality control in the wood industry. 3 Cr. (2-3).

WPT 243
**PRODUCTION MANAGEMENT**
Introduction to the processes of obtaining, manufacturing and marketing wood products in order to produce a profit. 3 Cr. (2-3).

WPT 244
**EQUIPMENT AND MACHINERY**
A survey of the basic types of machinery used in wood processing and their relationship to the profitable management of a business. 3 Cr. (2-3).

## WORD PROCESSING (WDP)

WDP 121
**WORD PROCESSING I**
Trains entry-level word processing operators on various types of power typewriters and output devices. Operation of mag card, tape, and electronic typewriters is covered. Training is also provided on stand-alone machines using floppy disks and CRT screens. Operation of an ink-jet printer is included. 3 Cr. (3-0). *Prerequisite: SEC 111 or SEC 509.*

WDP 231
**MACHINE TRANSCRIPTION AND OFFICE PROCEDURES**
Effective transcription of machine recorded information using word processing equipment is emphasized. Introduction to machine transcription is given on the Audio Visual Tutorial (AVT) System. Equipment, efficient techniques and procedures, proofreading skills and effective dictation are covered. Various office forms, mailing operations, filing, and operation of office equipment is also covered. 3 Cr. (2-3). *Prerequisite: WDP 121.*

WDP 232
**WORD PROCESSING II**
Further develops the skills and knowledge acquired in Word Processing I. Emphasizes advanced machine features, including communication, file manipulation and the interface between various word processing machines. Includes training on text-editing features of the computer. 3 Cr. (3-0). *Prerequisite: WDP 121.*

WDP 241
**WORD PROCESSING III**
The administrative and managerial aspects of operating a word processing center are emphasized. Review of the literature, feasibility studies, equipment selection, procedure manuals, center design and personnel matters are covered. The goal is to develop operating skills, decision-making and human relations skills to the levels required for employment. 3 Cr. (3-0). *Prerequisite: WDP 232.*

WDP 242
**WORD PROCESSING INTERNSHIP**
"Live" work experience on word processing equipment either at the College or in a cooperating business. Cooperative work experience (co-op) may be substituted. 3 Cr. (0-15). *Prerequisite: WDP 232.*

# EDUCATIONAL SERVICES

## Orientation

Prospective students participate in an orientation program designed to introduce them to the college community and its various services and activities. Students also schedule the appropriate academic courses for their first semester.

## Counseling, Career Development and Placement

Counseling, Career Development and Placement is located in Room 157, Learning Resources Center, adjacent to the Library. Counseling, Career Development and Placement houses a wide variety of occupational and educational information, including pamphlets, booklets, film strips and other career library resources. Staff members are available to work with individuals as they use these materials and to provide counseling for those who need assistance in career decision making. Other services include programs in resume writing, interview training, and job search strategies. Counseling, Career Development and Placement is open to both students and non-students.

### Counseling and Career Development

Staff are available to help students with personal, academic, and career problems.

*Advisors:* Each student is assigned an academic advisor who will help the student schedule courses. The advisor is usually an instructor in the student's program area. Students should discuss academic concerns or problems with their advisor.

*Counselors:* Counselors are available to aid students in resolving many types of problems. Such problems may involve social, emotional, vocational, and personal concerns. Any need or concern which is perceived by the student as important will be viewed in the same way by the counselor. Information shared with a counselor will be held in confidence.

### College Transfer

Counseling, Career Development and Placement also assists students who need advice about transferring to other educational institutions. We keep a complete file of college catalogs and have statistics on various programs into which our students have transferred.

### Placement Services

Placement services are designed to aid the prospective graduate seeking employment, alumni interested in career and employment information, and students who want to work part-time while attending College. Counseling, Career Development and Placement maintains a file of full and part-time job opportunities as well as addresses of prospective employers. A library of company literature and applications is maintained in the office for students' use. Information on full and part-time job openings is also published regularly in *The SPOTLIGHT* (student newspaper).

The Counseling, Career Development and Placement Office schedules on-campus interviews for companies which come to the College to recruit prospective graduates. Companies recruiting on campus include a number of leading industries from across the country. On-campus recruitment usually takes place from September through December and from February through April. Information on these interviews is announced in *The SPOTLIGHT* and in the *New Week News.*

Placement seminars are held each semester, just prior to graduation, for prospective graduates. During these seminars sample letters of application and resumes are distributed. Students learn how to prepare for job interviews and receive information on employment trends in various parts of the country. During the seminars, students also provide information for their placement files at the College.

Counseling, Career Development and Placement also publishes a graduate placement report in October of each year. The report shows the number of students, by program, who have obtained jobs and the average salaries of graduates one year after graduation. The most recent survey shows (based on a 95 percent return rate) that 93 percent were employed and continuing their education. Enrolled or prospective students and other interested persons may review this report in the Admissions Office, Academic Center, Room 104, or in Counseling, Career Development and Placement, Learning Resources Center, Room 157.

## Tot Watch

Supervised Tot Watch services are provided on campus from 8 a.m. to 4:30 p.m. during the fall and spring semesters. Students with pre-school children ages two-and-a-half to five may use these services for a nominal fee. Evening Tot Watch is available from 5:45 to 10:15 p.m., Monday through Thursday during the fall and spring semesters. Students with children ages four to eight may use these services for a nominal fee. For regulations and additional information, write or phone:

*Tot Watch*
*The Williamsport Area Community College*
*1005 West Third Street*
*Williamsport, PA 17701*
*(717) 326-3761, ext. 329*

# CAMPUS LIFE

The College's student activities and athletics programs will give you the chance to meet other students and staff in a friendly relaxed environment. These activities also provide opportunities to gain leadership skills and to pursue special interests or hobbies.

## Army Reserve Officers Training Corps (ROTC)

Students may enroll in the Army's Reserve Officers' Training Corps (ROTC) Program offered through a cross enrollment provision with Bucknell University. All qualified freshmen and sophomore men and women are eligible to enroll, without obligation, in the basic course and can compete for full tuition and fees Army ROTC scholarships.

The advance course—the junior and senior years—will be taken at a four-year institution after the student transfers. Veterans of enlisted service with any of the Armed Forces may qualify for a special advanced course program leading directly to a commission in the Pennsylvania Army National Guard upon graduation from the College or a commission on Army active duty after completion of undergraduate studies elsewhere.

Successful completion of Army ROTC will be entered upon the student's permanent academic record but the College will not grant academic credit.

For additional information on the Army ROTC program contact the Director of Counseling, Career Development and Placement, Learning Resources Center, Room 157.

## Athletics

The College currently has basketball (men's and women's), wrestling, cross country, golf, and tennis teams that compete on an intercollegiate level.

Intramural sports provide opportunities to participate in active competition, to improve physical strength and skill, to pursue leisure time activities, and to develop friendships. The Physical Education staff conducts a variety of intramural athletic leagues for men and women. Activities include basketball, bowling, golf, handball, horseshoes, soccer, softball, table tennis, touch football, track and field, volleyball, wrestling, and others.

## Cheerleading

Tryouts for cheerleading are held each fall. Cheerleaders are selected on the basis of skill, poise, personality, and enthusiasm.

## College Colors and Nickname

The College colors, gold and burgundy, and the nickname, Wildcats, were selected by popular vote of the students.

## Clubs

New student clubs and organizations are constantly being formed. The following clubs are currently recognized:

Agribusiness Club
Alpha Omega Fellowship
Alpha Pi Delta (Architectural)
Alumni Association
American Welding Society (inactive)
Artists Unlimited
Automotive Fraternity (inactive)
Biology Club (inactive)
Chi Gamma Iota (Veterans) (inactive)
Cinema Club
Circle K
Civil Engineering Technology Club
Communications Club
Computer Science Club
Diesel Power Club (inactive)
Food & Hospitality Student Management Organization
Forest Technician Association
Frisbee (inactive)
Gamma Epsilon Tau (Graphic Arts)
Horticulture Technicians Association
Inter-Club Council
International Relations Club (inactive)
Mechanical Engineering Club

New Life Fellowship
Northcentral Pennsylvania Chapter of the Construction Specifications Institute
Outing Club
Parents and Friends of Tot Watch
Phi Beta Lambda (Business)
Photography Club (inactive)
Plumbers Club (inactive)
Rifle and Pistol Club
Service and Operation of Heavy Equipment Association
Sigma Pi Omega
Ski Club
Sports Car Club (inactive)
SPOTLIGHT Staff
Student American Dental Hygienists Association
Student Government Association
Student Nurses of The Williamsport Area Community College (SNOW)
Student Pennsylvania State Education Association (inactive)
Student Society of Manufacturing and Engineering
Table Tennis Club
Theater Ensemble
Varsity Club
Writer's Workshop (inactive)

## Publications

*The SPOTLIGHT,* the official College newspaper, is published at regular intervals throughout the College year by students.

The *Student Handbook* provides information on student events, regulations, and student services. The Handbook also includes a calendar of student activities.

*New Week News* is a newsletter issued several times weekly which keeps the student body and faculty informed on current issues, announcements, programs, and activities that affect the College.

*W.A.C.C. After Dark* is a newsletter issued every other week by the Center for Lifelong Education. The newsletter includes information on courses, programs, and activities for evening students.

## Social/Cultural/Recreational Activities

As a student you'll have opportunities to participate in a variety of activities sponsored by college groups. These include:

—The Student Government Association sponsors Fall and Spring Week Activities and other social events and schedules recreational activities including skiing, roller and ice skating, tobogganing and swimming.

—The Special Events Committee sponsors programs ranging from lectures and theater to the annual Bluegrass Festival.

—The Office of the Coordinator of Intramural Athletics and College Activities schedules debates, movies, lectures, and other activities related to programs and courses at the College.

—Student clubs and organizations sponsor special activities ranging from a weekly movie series sponsored by the Cinema Club to productions sponsored by the Theatre Ensemble. Service projects, held throughout the year, are also sponsored by student clubs.

## Student Government

The Student Government Association (SGA) is the student governing body of the College. Its purpose is to provide maximum opportunity — through a democratic, representative organization — for students to promote the interests of the students and of the College. It functions under a constitution developed by the students. All students are members of SGA and are invited to attend meetings. The SGA office is located in Room 136, Academic Center, ext. 248. Senators are selected at the beginning of each semester. Interested students should contact an SGA officer, their curriculum advisor or the Coordinator of Intramural Athletics and College Activities in the Gymnasium.

# ACADEMIC INFORMATION

## Classification of Students

**Full-Time:** A full-time student is one who carries 12 or more credits. Sixteen hours of lecture/demonstration, or 48 hours of shop/lab, equal one credit equivalent.

**Part-Time:** A degree or certificate candidate who carries less than 12 credits per semester is enrolled as a part-time student.

**Non-Degree:** A non-degree student is one who is not enrolled in a degree or certificate program. Non-degree students can select courses without regard to degree or certificate requirements. Non-degree students are not eligible for financial aid. They are permitted to schedule classes on a first-come, first-served basis (after currently enrolled students have been given the opportunity to schedule classes). Non-degree students must complete an "Admissions Application" form the first time they schedule classes, but are not required to pay the application fee.

**Special Student:** A handicapped student who cannot meet some of the requirements in certain shop programs is awarded a special certificate. It is not awarded to a student who may have failed to meet the requirements of a certificate program. Students must notify the College — PRIOR TO BEGINNING A PROGRAM — if they want to complete only part of the program and earn a special certificate. Exceptions will be made only for a student who becomes handicapped while enrolled in a certificate program.

Students age 18 or older who do not have a high school diploma or the equivalent may also be classified as "special students."

**Satisfactory Progress:** As long as a postsecondary student is officially enrolled and officially permitted to continue his/her studies toward a degree or certificate at the College, the student will be considered to be making satisfactory progress. Students receiving financial aid must meet additional criteria as explained in the Financial Aid section of this catalog (page 12) in order to continue to be eligible to receive financial aid.

## Scheduling/Registration

Because the number of students who can register for any class is limited, all students should schedule classes during the announced scheduling period. The College strongly urges all students to complete their registration, including payment of all fees, before the announced day of Late Registration for each semester. On the day of Late Registration students may schedule classes on a first-come/first-served basis. The College does not guarantee any student the right to register after Late Registration day.

## Credit Load

The academic year is divided into two semesters of approximately 16 weeks each. The normal full-time load per semester is 12 to 18 credit-hours. Students should allow an average of at least two hours preparation for each credit-hour of course work.

## Academic Overload

An academic/credit overload occurs when a student enrolls for more than 18 credits per semester (except for students in programs which require more than 18 credits per semester). In a summer session, an academic overload occurs when a student enrolls in more than two courses (6-8 credits) at the same time.

Students who want to schedule a credit overload must obtain permission from the Division Director of the program in which they are enrolled.

A student must have earned a 3.00 cumulative grade point average or a 3.00 average the previous semester in order to qualify to schedule a credit overload. Exceptions must be approved by the Dean of Academic Affairs or his/her designee.

## Fees for Students Enrolling for Overload Credits

With the exception of students in programs which require more than 18 credits a semester (as described in the College catalog), a degree or certificate student enrolled for more than 18 credits (during the fall and spring semesters) will be charged the current tuition rate per credit for each credit over 18. (For example, if the student schedules 19 credits, he/she will be billed for the current full-time tuition plus the tuition for one credit.)

## Change of Course

After the official registration period is over, the student may make adjustments in his/her schedule through the process of adding and/or dropping courses.

**Dropping a Course:** A student may drop a credit course during the first three weeks — or the first 20 percent of instruction — of the term by having his/her advisor complete the appropriate section of a "Student Status Change" form. The course will not appear on the student's academic record. After the third week (or equivalent) the student must withdraw from the course. (See Terminations, Withdrawals and Refunds, page 127.)

**Adding a Course:** A student may add a course only during the first week of classes (two days in Summer Term) by having his/her advisor complete the appropriate portion of a "Student Status Change" form.

The approval of the appropriate Division Director(s) must be obtained before a change can be made.

Developmental courses and any related course work required may be dropped or added until the end of the third week of classes.

The Dean of Academic Affairs or his/her designee may make exceptions in special circumstances.

## Change of Program

A change of program may be made at the beginning of any semester. Currently enrolled students who wish to change from one program of study to another must follow the steps below.

1. Complete an "Admission Application" and submit it to the Admissions Office. Acceptance into the new program will be based on sponsorship status and on the date the applicant's file is complete in the Admissions Office.
2. Complete a "Student Status Change" form; obtain all required signatures (advisor, counseling, division director, and admissions). Submit the form to the Student Records Office.

When a student changes his/her program, all credits earned in the prior program will be evaluated for transfer to the new program. All courses will appear on the student's transcript. Only courses applicable to the new program will be used to calculate the student's new cumulative grade point average.

## Repeating a "D" or "F" Course

Students may repeat a course in which they earned a grade of "D" or "F." However, they must improve the grade of the repeated course to affect their cumulative grade point average. If the student repeats the course at The Williamsport Area Community College and improves his/her grade, both grades will appear on the permanent record card with the higher grade used in calculating the cumulative grade point average. If the student repeats the equivalent course at another institution and transfers the course to the College (subject to Transfer Policy, see page 7), the original grade remains on the transcript but is not included in the semester or cumulative average. (The credits for the transferred course will not be used in calculating the student's cumulative grade point average.) If the student repeats a course and earns a second "D" or "F", the second grade and credits will not be used in calculating the cumulative grade point average.

## Auditing a Course

Auditors are not required to prepare lessons or papers or take examinations, nor do they receive credit for the course. Students are charged tuition for courses taken on an audit basis.

With the consent of the instructor and the Dean of Academic Affairs, a student may enroll as an auditor in any course that has not exceeded its enrollment quota.

Students must inform the Student Records Office that a course is being taken on an audit basis when they schedule. A student may not change from credit to audit status after the beginning of the semester.

## Grading System

The College uses the following system of grading (4.00 basis) to indicate the quality of a student's work:

| Grade | Interpretation | Grade Points |
|---|---|---|
| A | Superior | 4 |
| B | Above Average | 3 |
| C | Average | 2 |
| D | Below Average | 1 |
| F | Failing Work | 0 |
| W | Withdrawn | — |
| WP | Withdrawn Passing | — |
| WF | Withdrawn Failing | 0 |
| I | Incomplete | — |
| AU | Audit | — |
| SP | Satisfactory Progress | — |

An instructor may assign an "I", Incomplete, grade to give a student additional time to complete required course work if the student has missed an exceptional number of classes due to accident, illness or other extenuating circumstances. An incomplete will not be used to extend the time a student has to complete class requirements beyond the normal allotted time.

If a student is awarded a letter grade of "I", the instructor will submit an incomplete grade form with the student's grade roster. The form describes the work which must be completed and gives a deadline for completing the work. The deadline date will be before the end of the following semester. Copies of the incomplete grade form will be sent to the student and his/her advisor. A permanent "F" will be recorded if the work is not completed prior to the end of the following semester.

"SP", Satisfactory Progress, is used for certain students in Developmental Studies courses. "SP", Satisfactory Progress, will be awarded if students do not complete all course requirements but do meet the requirements for "SP" as established in the syllabus for a particular developmental course. Students earning an "SP" will re-enroll in the same course. Upon mastery of all course objectives, the student will earn a traditional letter grade (in the semester in which the course was repeated).

## Grade Reports

The College will notify, by mail, all students who are making unsatisfactory progress (D or F) in any course at mid-semester (during the fall and spring semesters). Students who receive such mid-term grades should immediately consult with their instructors and faculty advisor in an effort to improve the quality of their work. Final semester grades will be mailed after the end of the semester or summer session. The grade report will show all course work completed to date by the student. Students should check the cumulative grade report for accuracy and to be certain they are meeting graduation requirements. To protect the confidentiality of the student's record and in compliance with federal law, *no grades will be given over the phone.*

Since the grade report is also an unofficial copy of their transcript, students may use their grade report when an unofficial transcript is required. (For information on obtaining official transcripts, see page 11).

## Cumulative Grade Point Average

A student's cumulative grade point average is computed by dividing the number of grade points by the total number of credits for which the student has earned a grade of A, B, C, D, F, or WF. No other grades in the College's grading system are used in the calculation.

The cumulative grade point average includes: 1) Credit for Williamsport Area Community College courses completed by a student currently enrolled in a degree or certificate program; 2) Credit for Williamsport Area Community College courses previously completed by a student who reenrolls in the same program when such credits are appropriate for the new program; 3) Credit for Williamsport Area Community College courses previously completed by a student who reenrolls in a different program when such courses are appropriate for the new program; 4) Credit for Williamsport Area Community College courses previously completed by a student who changes to a different program when such credits are appropriate for the new program; 5) Credit earned through cross-registration with Lycoming College.

The cumulative grade point average does not include credits from the following: 1) CLEP exams; 2) Advanced Placement; 3) Credit by Exam; 4) Credit for Work/Life Experience; 5) U.S. Armed Forces Institute Credit and Service Credit; 6) Credit transferred to The Williamsport Area Community College from another institution; 7) Credits previously earned by a student who changes to a different Williamsport Area Community College program or who reenrolls in a program when such credit does not meet the current requirements for the new program; 8) Credits for courses in which the student earned a "D" or "F" if the student repeats the course. If the student repeats the course at The Williamsport Area Community

College and earns a higher grade, the higher grade will be used in calculating the cumulative grade point average. If the student repeats the equivalent course at another institution and transfers the course to The Williamsport Area Community College, the original grade remains on the transcript but is not included in the cumulative average. (The grade for the transferred course is not included in the cumulative grade point average.)

## Withholding Grades

A student's grades and records will not be released if the student has any outstanding loans or fines (for example, parking fines or library fines) at the College or if the student has outstanding obligations to the College for the return/replacement of items such as books, tools or equipment. When a hold is placed on a student's grades, the student will be notified in writing of the hold and of the action needed to release his/her grades or records.

## Advanced Placement Credit

The Williamsport Area Community College believes that placing students at the proper educational level will contribute to the student's success in College.

Advanced placement is designed to give students credit for the skills or competencies they have acquired prior to entering College. Students who have completed advanced courses in high school or an area vocational technical school program, as part of military training, and those with prior educational experiences may be eligible for advanced placement. We recommend that applications for advanced placement be submitted by March 15 for students who plan to enroll in the fall semester, by November 15 for students who plan to enroll in the spring semester, and by April 15 for students who plan to enroll in the summer semester.

Students from area vocational technical schools with which the College has Task Level Articulation Agreements can obtain advanced placement on the basis of an instructor-verified list of competencies. Such students must also take the College's reading, English and math placement tests as early as possible so that they can take developmental courses, if needed, in the summer before they begin their regular program.

New students will receive a schedule of advanced placement test offerings showing the date and times when tests will be given. The student should indicate which test(s) he/she wishes to take and return the form to the appropriate Division office.

A copy of the evaluation of the advanced placement test or other assessment will be sent to the student. A fee of $25 per course will be charged when credit from advanced placement testing is entered on the transcript.* Credit earned through advanced placement will be shown on the student's transcript after the fee is paid and the student has successfully completed one semester at the College. Up to a maximum of 30 credits may be granted through non-traditional credit evaluation (advanced placement, credit by exam, and work/life experience). Advanced placement credit is not used in calculating the student's cumulative grade point average. Only the course number, title, and number of credits will be entered on the transcript. No letter grades will be shown.

*The $25 fee will not be charged secondary students assessed externally.

## Credit By Exam

Students may apply to take any College course by examination. In order to challenge a course by examination, a student must have completed at least 12 credits at The Williamsport Area Community College and have earned a grade point average of 2.00. Application to take a course by examination must be made in writing to the appropriate Division Director. Approval must then be given by the instructor(s) of the course involved and the Division Director.

If approval is granted, a fee of $25 must be paid at the Bursar's Office prior to each examination. No examination will be prepared or administered until the student presents the $25 receipt. (The $25 fee will be waived for students who complete ENL 111 as a result of their work in ENL 011, Basic English.)

The examination is prepared, administered (at the time set by the Division Director), and evaluated by the instructor(s) of the course. A copy of the result of the examination will be sent to the student. When a student passes the examination for the course, the course number, title, and number of credits only will be entered on the student's transcript. (No letter grades will be listed on the transcript.) A maximum of 30 credits may be earned through non-traditional credit evaluation (work and/or life experience, advanced placement, credit by exam). Credit by exam may not be used to remove a D, F, or WF grade. An examination in a specific subject may be taken only once. All exceptions to the above requirements must be approved by the Dean of Academic Affairs or his/her designee.

## Credit for Work and/or Life Experience

The College recognizes that many individuals acquire rich academic and technical experiences through working and/or living in a particular situation. Students who have been accepted to the College and who feel their work or living experiences warrant consideration for academic credit should apply in writing to the Division Director responsible for the course(s) involved. The application must include evidence and rationale for granting credit.

The Division Director will appoint a committee to assess the candidate's educational and work background. The student will be asked to document his/her work and life experiences and to show that the experiences are equal to a course(s) offered at the College. The committee will also interview the student. The committee will recommend the number of credits to be awarded. A fee of $25 per course will be charged for the evaluation of credit.

A copy of the evaluation of work and/or life experience will be sent to the student. Credit earned through work/life experience will be shown on the student's transcript after he/she earns 12 credits at the College. Credit for work/life experience will not be used in calculating the student's cumulative grade point average. No letter grade will be listed on the student's transcript. Up to a maximum of 30 credits may be earned through non-traditional credit evaluation (work and/or life experience, advanced placement, credit by exam). All exceptions to the above requirements must be approved by the Dean of Academic Affairs or his/her designee.

## Cooperative Education

Cooperative Education (co-op) offers students the opportunity to participate in supervised periods of relevant and meaningful employment. While on co-op assignment, students work as regular employees of the co-op employer, receive vocational counseling, and earn academic credit for knowledge and/or skills acquired from their work experience. Co-op may be used to replace or supplement required courses in most programs.

The following options are available to qualified students in most programs:

1. Alternating Plan: Students rotate periods of full-time work and full-time on-campus study.
2. Parallel Plan: Students work part time and attend regular classes during the same semester or summer session.
3. Summer Plan: Students work full time during a summer session followed by a parallel plan co-op during the following semesters.
4. Career Advancement Plan: Students attend college on a part-time basis while working either full or part time at their regular (not a "co-op") job. Designed for employed students.
5. APCO Plan (Advance Placement with the Co-op Option): Students who have participated in cooperative education while completing a related vo-tech program receive advanced placement and are encouraged to continue part or full-time co-op while attending college.

Variations of the above options are possible, depending upon job and College requirements. Co-op placements range from eight weeks to a full semester or summer of 15-16 weeks.

In order to participate in Cooperative Education, a student must have successfully completed a minimum of one full semester (12 credits) or its equivalent and must maintain a cumulative average of 2.00 or better. (A 2.50 average in courses related to the student's program is recommended.)

The Dean of Academic Affairs or his/her designee may waive these requirements in the following situations:

1. If the College determines that the student has acquired competencies — through previous training and/or experience — which are equivalent to those provided during one full semester of instruction at the College.
2. When the student's cumulative average falls below the level required and/or recommended due to special circumstances.

A student who is unable to meet and maintain either the behavioral or performance standards established for co-op employment may, with just cause, be withdrawn from co-op employment by either the employer or the College.

A student may withdraw or be withdrawn from co-op employment without penalty if — for any well-founded reason — the work site is deemed to be unsafe or if the level of work assigned does not meet the learning objectives established by the student and the College.

### Employer Participation

Employers who can provide full-time or part-time positions which meet the following qualifications are encouraged to participate in the co-op program:

1. The job must provide educational experiences in an area directly related to the student's course of study or career goals.

2. The job must provide learning experiences that will be meaningful and challenging for the student.

3. The job should be relatively secure in order to provide at least one or more full co-op work terms.

4. The employer will cooperate with the College and the student in developing specific learning objectives for each work period.

5. The employer will enter into a training agreement with the College and the student.

6. At the end of the work experience, the employer agrees to evaluate the student's performance and progress toward meeting specific learning objectives.

Specific information can be obtained directly from the student's academic division or by contacting:

*College Cooperative Education Office*
*The Williamsport Area Community College*
*Room 209, Academic Center*
*1005 West Third Street*
*Williamsport, PA 17701-5799*
*Phone (717) 326-3761, ext. 273*

## Lycoming Cross-Registration

The Williamsport Area Community College participates in a cross-registration program with Lycoming College. In order to cross-register for courses at Lycoming College, a Williamsport Area Community College student must obtain the permission of his/her advisor and division director, the Dean of Academic Affairs and the academic dean at Lycoming College. In order to participate in this program, students must be enrolled on a full-time basis in a degree or certificate program and must not have completed more than 70 credits. Part-time students are not eligible to participate in this program. Students may cross-register only for courses not offered at The Williamsport Area Community College. Students participating in cross-registration will be responsible for paying any special laboratory fees or charges required for the course.

Grades earned through participation in cross-registration will be recorded on the student's Williamsport Area Community College transcript. Courses completed with a passing grade ("D" or better) will be credited toward graduation. Grades earned in courses taken at Lycoming College will be included in the student's semester and cumulative average. Students may obtain additional information on cross-registration procedures from their advisors or the Student Records Office.

## Graduation Requirements

All entering students must exhibit competencies in the basic skills (reading, computation, and written expression) necessary for success in their programs. Students who have not demonstrated these competencies on the college placement tests are required to complete specific courses in order to earn a degree or certificate from The Williamsport Area Community College.

### Associate Degree

The successful completion of a two-year program of study — identified as an Associate Degree program in this catalog — at The Williamsport Area Community College leads to an Associate of Applied Science, an Associate of Arts, or an Associate of Applied Arts Degree. To be eligible for an Associate Degree from The Williamsport Area Community College, the student is expected to satisfy the following:

a. Complete courses required in a specific program of study as set forth in this catalog. Students may substitute courses with prior written permission of the appropriate Division Director and the Dean of Academic Affairs. Only courses numbered 100, 200, 500 and 600 can be applied toward meeting graduation requirements for an associate degree. Only courses numbered 100-299 can be applied to the requirements for an associate degree in General Studies. Courses numbered 001-099, 700 and 800 cannot be used to meet associate degree graduation requirements.
b. Complete a minimum of 30 credits in courses offered by The Williamsport Area Community College. Credit earned by advanced placement, credit by examination, or work/life experience may be included in the 30-credit minimum. A student must be enrolled in courses at The Williamsport Area Community College for at least the last 12 credit hours of a program.

c. Earn at least a "C" average (2.00 cumulative grade point average) in all courses and complete all required courses with a grade of "D" or better.
d. Satisfy health and physical education requirements as stated in a student's curriculum. A student may receive a waiver from physical education based upon the following considerations:
   1. Age - A student must be 27 years of age or over in order to obtain a waiver.
   2. Military Service - The requirement may be waived if the student was on active duty in the Armed Services of the United States for a minimum of at least one year. (See page 8 for conditions and requirements.)
   3. Physical or Medical Reasons - The requirement may be waived because of physical or medical reasons. (Student must have a statement from a medical doctor stating explicitly the reason for the waiver.)
e. Fulfill all financial obligations to the College (including payment of any fines).

### Certificates

Certificates will be awarded for the successful completion of a program of study identified as a certificate program in this catalog. To be eligible for a Certificate from The Williamsport Area Community College, the student is expected to satisfy the following:

a. Complete a recommended program of study as set forth in this catalog. Students may substitute courses with prior written permission of the appropriate Division Director and the Dean of Academic Affairs. Only courses numbered 100 or above can be applied toward meeting graduation requirements. Courses numbered 001-099 cannot be used to meet graduation requirements.
b. Complete at least half of the credits required, including the last semester, in courses offered by the College. This includes credit received for advanced placement, credit by examination, or work/life experience. A student must be enrolled in courses at The Williamsport Area Community College for at least the last 12 credit hours of a program.
c. Earn at least a "C" average (2.00 cumulative grade point average) in all courses and complete all required courses with a grade of "D" or better.
d. Fulfill all financial obligations to the College (including payment of any fines).

### Additional Information

If after completing the final semester, the student has not earned all the credits required for a degree or certificate, he/she may, with prior approval of the Dean of Academic Affairs or his/her designee be permitted to take up to six semester credit hours from another accredited college/institution to fulfill requirements for a degree or certificate from The Williamsport Area Community College. Such work must be completed within two years after the last semester in which the student attended classes at The Williamsport Area Community College. After two years, the student must reenroll at The Williamsport Area Community College (See Reenrollment and Transfer Credit, pages 6 and 7.) Only grades of "C" or better are acceptable for such transfer credit. (Grades for transfer credits are not included in the student's cumulative grade point average.)

All exceptions to graduation requirements must be approved by the Dean of Academic Affairs or his/her designee.

**Petition to Graduate:** In order to graduate a student must report to the Student Records Office and complete a "Petition for Graduation" form during the first five weeks of classes of the semester in which the student intends to graduate. If this form is not submitted, the student's name will not appear on the Graduation Program. In addition, *the student's final transcript will state that the student is a "non-returning" student,* rather than a graduate.

Students who meet graduation requirements in the summer will graduate at the end of the second summer session.

## Graduation Fees

Any students who wish to receive an engraved diploma or certificate when they graduate must pay a $5.00 fee when they petition to graduate. If a student orders a diploma or certificate after the advertised date for ordering a diploma (i.e., two months prior to the date of graduation), the student must pay a special processing fee of $10.00.

If a graduating student does not wish to receive an engraved certificate or diploma, he/she will not be charged the graduation fee but must still file a petition.

## The Dean's Honor List

The honor list is announced by the Dean at the completion of each semester. The list will include only those full-time students who have a semester grade point average of 3.50 or better.

## Terminations, Withdrawals and Refunds

### Student Termination

If a student finds it necessary to withdraw from the College for any reason, the student must:

1. Officially withdraw from each course by completing the "Student Status Change" form.
2. If the student is also applying for a refund, the "Request for Refund" form must be filled out and submitted with the "Student Status Change" form.
3. Satisfactorily account for all property issued by the College.
4. Settle all outstanding College obligations.

Students who do not officially withdraw from the College in the manner described above will receive the grade of "F" or "WF" in all courses.

### College Termination

The College reserves the right to terminate enrollment of any student or to withhold the degree of any student, if, in the opinion of College authorities, his/her further association is not in the best interests of the student or the College. Specific situations in which the College may terminate a student include, but are not limited to:

1. Failure to meet financial obligations.
2. Failure to meet requirements or to complete objectives in a given program and/or course.
3. Failure to demonstrate safe practices.

Recommended procedures for appealing questions on academic evaluation are given in the *Student Handbook.*

### Withdrawal From A Course

**Student Withdrawal** — After the official drop/add period for the term (the end of the third week or 20 percent of instruction) until the end of the tenth week, or equivalent, for each term, a student may withdraw from a College course with a grade of "W" (unless the student is withdrawn from the course by the College for absenteeism - in which case the student will receive a grade of "WF").

If a student withdraws from a course after the tenth week (or equivalent), the instructor, with the approval of the appropriate Division Director, will award a grade of "WP" or "WF." No credit is given for a "WP" grade. A "WF" grade affects the student's grade point average in the same manner as an "F". If a student stops attending a class without officially withdrawing from the course, the student will receive a grade of "WF" or "F."

Students may withdraw from courses until the last day of classes.

Students must complete and submit a "Student Status Change" form to withdraw from a course.

**College Withdrawal** — When an instructor determines that a student is not adequately meeting course objectives and has missed more than the equivalent of the class hours in one week of instruction, the instructor MAY recommend that the student be withdrawn from the class by the College. The College will withdraw a student from a course for excessive absences only after the first three weeks (or 20 percent of instruction). A grade of "WF" will be recorded on the student's transcript.

### Refunds

Charges for tuition are refundable upon official termination from the College. In order to be eligible for a refund, the student must complete all steps given under Student Termination above.

Refunds of tuition will be made according to the following schedule for the fall and spring semesters:

| | |
|---|---|
| Prior to the first day of classes | 100% Refund |
| First week of classes | 80% Refund |
| Second week of classes | 70% Refund |
| Third week of classes | 60% Refund |
| After third week of classes | No Refund |

Refunds will be made according to the following schedule for summer semesters:

| | |
|---|---|
| Prior to the first week of classes | 100% Refund |
| 7% of total instructional hours | 80% Refund |
| 13% of total instructional hours | 70% Refund |
| 20% of total instructional hours | 60% Refund |
| After 20% of total instructional hours | No Refund |

The Dean of Academic Affairs or his/her designee may waive College termination or withdrawal requirements in special circumstances.

## Student Conduct

On admission to The Williamsport Area Community College you accept unqualified commitment to conduct yourself at all times, both on and off the campus, in a responsible manner which conforms with the generally accepted standard of adult behavior. It is expected that you will show courtesy and respect for the administrative officers, faculty, and employees in your personal contacts. You must also understand and accept the necessity for various College regulations and comply with the directives of those authorized to enforce the regulations. If you conduct yourself in a manner contrary to the best interests of the College you will be subject to such penalties as the circumstances justify, including suspension or expulsion. Additional information regarding student conduct on campus and student judicial procedures is available in the *Student Handbook*. All students are expected to read and follow the policies in the handbook.

A student may be suspended or dismissed for improper conduct, failure to comply with College regulations, academic dishonesty, habitual absences, lack of effort and interest, possession of, or being under the influence of, alcoholic beverages or illegal drugs, or under other circumstances as determined by the Board of Trustees.

In all cases where academic dishonesty is established, the student may be dropped from the course with a grade of "F". For a second offense, the student may be dismissed from the College. In a case involving a question of academic dishonesty, the professor in whose class the incident is alleged to have occurred will consult with the appropriate Division Director regarding disciplinary action.

## Attendance Policy

1. Regular and prompt attendance at all classes and at scheduled conferences with instructors is expected of all students. All work missed because of absence, regardless of the cause, must be made up to the satisfaction of the instructor. Students who know that they will be absent are expected to get assignments from instructors in advance so that the necessary work will be completed before the student leaves, or immediately upon his/her return. This applies to absences for College activity trips as well as absences for other reasons. In all cases of anticipated absence, students should confer with their instructors in advance whenever possible.
2. All faculty are required to record attendance daily.
3. When a student, in the instructor's judgment, is not adequately meeting the course objectives and has missed *more than* the equivalent of the class hours held in one week of instruction, the instructor MAY recommend the student be withdrawn from class by the College.

   If, in the judgment of the instructor, extenuating circumstances are involved (e.g., a death in the family, hospitalization, illness, or serious accident), the following alternatives are available to the student.

   a. To arrange with the instructor's approval a stated plan for meeting course objectives and responsibilities. If completion of the approved plan extends beyond the semester, the student can receive an "I" grade (Incomplete).
   b. Until the end of the tenth week, or equivalent, of each term, the student can withdraw and receive a "W" grade (Withdrawn).
4. Based upon the instructor's recommendation, a decision to withdraw a student from a course MAY be made by the appropriate Division Director. Withdrawal from a course by the College for excessive absences will only be done after the first three weeks of each term or 20 percent of instruction and will be recorded on the student's transcript as a "WF" (Withdrawn Failing).
5. Appeal Process: Students who are withdrawn from a course by the College may appeal the decision within three school days of notification.

   The student may appeal the decision to either the Dean of Academic Affairs OR the Ad Hoc Academic Policy Group consisting of the Dean of Academic Affairs, President of the Student Government Association, and Chairperson of the Academic Standards and Policy Committee.

## Academic Probation

Any degree or certificate candidate whose cumulative grade point average is below 2.00 will be placed on academic probation. A student on probation may be required to report to Counseling, Career Development and Placement for special counseling before registering for classes the following semester.

A student may be terminated from the College if his/her *cumulative* grade point average is under 1.50 at the end of the first semester's work, under 1.80 at the end of the

second semester's work, or under 1.90 at the end of the third semester of work. (A semester's work is generally defined as: 1) the courses listed for a semester in a given program, or 2) 15 credits of course work.) The Probation Committee will determine the semester status in special situations.

The Probation Committee meets at the end of each term. The Committee determines the conditions under which students with grade point averages below 2.00 will be permitted to continue at the College. The Committee may also terminate students. Students who are terminated may appeal the action to the Chairperson of the Probation Committee or his/her designee.

## Final Examinations

Final examinations may be scheduled by instructors at the end of each semester. A student who is absent from a final examination without good reason is subject to a failing grade.

## Developmental Studies Program

The open admissions policy of The Williamsport Area Community College permits students to enroll in the programs of their choice. However, all entering students must exhibit competencies in the basic skills (reading, computation, and written expression) necessary for success in their programs. Students who have not demonstrated these skills on the college placement tests are required to complete specific courses in order to earn a degree or certificate from The Williamsport Area Community College.

The College will award institutional credit for developmental studies courses (courses numbered 001-099) and the grades earned in those courses will be included in the student's grade point average. Five developmental courses—RDG 101, RDG 102, RDG 103, CHD 100, and CHD 101—carry elective credit and may be used to fulfill a general elective requirement. Developmental courses with institutional credit may not replace any course requirement or elective.

The Developmental Studies program is designed to serve a variety of students:

- —those who lack academic skills and requirements for the curriculum of their choice
- —the "non-traditional" student
- —unemployed adults
- —adults returning to school after a number of years of absence
- —high school dropouts
- —veterans
- —those students referred to the program by instructors who recognize a need for one or more of the program's services
- —those who require assistance and solicit the program services on a "walk-in" basis.

The program consists of courses in academic skills, human development, study skills and career planning.

Students may enter the entire program or part of it as the result of counseling, placement tests, academic record, or personal choice. While in the program, students will also take courses in their curriculum. One strength of the program is the frequent contact with staff who assist the student with course selection, problem solving, decision making, career planning.

Classwork is designed to promote a successful teaching-learning atmosphere. Varied learning strategies, individualized and self-paced instruction, small group sessions, tutorial and media support are characteristic of the course work.

## College Opportunity Programming (COPing)

This program, funded under the Equal Education Opportunity legislation, Act 101, serves students who are academically and financially disadvantaged. COPing students enroll in Developmental Studies courses. In addition they receive counseling and tutoring and participate in cultural and social activities and in a pre-college activity, and are assisted in developing a financial aid package designed to provide them adequate support.

For additional information on either the Developmental Studies Program or College Opportunity Programming, contact:

*Director of Developmental Studies & Act 101*
*The Williamsport Area Community College*
*1005 West Third Street*
*Williamsport, PA 17701*
*(717) 326-3761, Ext. 266*

# CENTER FOR LIFELONG EDUCATION

The Center for Lifelong Education provides a variety of educational opportunities and services that complement the College's traditional degree and certificate programming.

Designed primarily to meet the educational needs of adults, the Center for Lifelong Education offers hundreds of vocational, avocational, and personal enrichment courses throughout the year. These courses are taught on the College's central campus in Williamsport as well as at satellite locations throughout the College's service area.

Most of the courses offered through the Center for Lifelong Education are non-credit. They do not involve formal testing, do not offer grades, and may not be used to fulfill requirements in any of the College's credit curricula. They do offer students the opportunity to learn new skills, upgrade existing capabilities, develop increased knowledge, or participate in new experiences or activities.

Specialized courses are also available through the Center. Specific courses can be custom-designed to meet the training needs of individual businesses and industries. Continuing professional education courses are offered for those who require such courses in order to maintain licensure or certification. Trips and a variety of outdoor experiences are available through the Wilderness Adventure Program. The educational needs of senior citizens are met through participation in ELDERHOSTEL and the development of special courses and programs. Community service workshops and forums are also presented when there is a need to address specific topics which interest the residents in the College's service area.

The services available through the Center for Lifelong Education reflect its commitment to adult students. The Center is open from 8 a.m. until 10 p.m. Monday through Thursday and from 8 a.m. until 4:30 p.m. on Friday. Child care is provided through Evening Tot Watch for toilet-trained children between the ages of four and eight whose parents are attending evening classes. *W.A.C.C. After Dark* is published and distributed by the Center to keep evening students informed of important information and events on campus. The Center also serves as a testing site for professional examinations.

All of the programs and services available through the Center are financially self-sustaining. The Center does not receive any financial support from the College's sponsoring school districts. Nevertheless, all courses and services are modestly priced and are very competitive with those offered by other institutions.

The primary goal of the Center for Lifelong Education is to provide high quality, low cost educational opportunities and services — in locations that are accessible — at times that are convenient. For more information or to discuss your educational needs, please visit the Center for Lifelong Education in Room 102 of the Academic Center. If you prefer, you may call the Center at 326-3727. You will receive a warm reception and competent assistance.

# SECONDARY VOCATIONAL PROGRAM

The Williamsport Area Community College is the only community college in the state to offer secondary vocational education. The College's Secondary Vocational Program is a unique example of what 13 school districts and a community college can provide for their students and their communities.

The Secondary Vocational Program at The Williamsport Area Community College provides education and training to high school students who want to prepare for employment following graduation as well as those who plan to pursue advanced education or training. High school students enrolled in the program spend one-half of the school year (on a nine-week alternating schedule) at their home high schools where they complete the academic and physical education courses required for high school graduation and half the school year attending vocational/technical classes at the College.

The Secondary Vocational Program offers a combination of classroom work and practical experience. Students work in the College's shops and labs to learn and practice the skills they will need when they begin working. During their senior year many students gain additional experience through participating in the cooperative education program.

Each Secondary Vocational program is designed to provide students with the skills needed to gain entry-level employment in their field. Graduates of the program who wish to pursue advanced education in their field may be granted advanced placement credit for the skills and competencies acquired in the program.

## PROGRAMS

Auto Body Repair
Automotive Mechanics
Aviation Maintenance Technician
Carpentry
Cooperative Education (CAPSTONE)
Cosmetology
Drafting - Architectural/Mechanical
Electrical Construction
Electronics
Forestry
Health Assistant
Horticulture
Machine Shop
Masonry
Small Engine Repair
Welding

## SPONSOR SCHOOL DISTRICTS

Canton Area
East Lycoming
Jersey Shore Area
Keystone Central
Millville Area
Montgomery Area
Montoursville Area
Southern Tioga
South Williamsport Area
Sullivan County
Warrior Run
Wellsboro Area
Williamsport Area

For information on this program, contact the Director of Secondary Vocational Programs at (717) 326-3761, ext. 286, or write to the Office of Secondary Vocational Programs at the College.

# COMMENCEMENT AWARDS

Commencement awards give public recognition of achievement in various areas accompanied by cash awards in varying amounts.

ACCOUNTING FACULTY AWARD *for outstanding achievement in accounting to a non-transfer student on the basis of academic standing. Selected by the accounting faculty.*

ANCHOR/DARLING VALVE AWARD *for scholastic achievement in a certificate program in applied arts and sciences.*

AVCO AWARD *for scholastic achievement in humanities and social sciences.*

LEWIS H. BARDO MEMORIAL AWARD *to a student who exemplifies the ideals of Lewis H. Bardo (devotion to duty, helpfulness to others, friendliness, high ideals).*

DALE RUSS BERG AWARD *for proficiency in the operation and use of heavy equipment.*

ELLEN HARDING BERRY NURSING AWARD *presented to the student who has displayed outstanding scholastic achievement and exceptional ability in practicum and communication skills.*

BUSINESS MANAGEMENT FACULTY AWARD *presented to a management student for achievement in the field of study, for leadership qualities shown and cooperation with faculty and peers.*

CENTRAL PENNSYLVANIA CHAPTER OF CHARTERED LIFE UNDERWRITERS' AWARD *to an outstanding student in the two-year associate degree program in the Business and Computer Science Division who shows promise in the insurance field.*

THE CIRCLE K/P.D. MITCHELL MEMORIAL AWARD *to a student who achieves a favorable scholastic standing and exemplifies the high ideals of P.D. Mitchell such as: outstanding community service, sincere, devoted concern for those less fortunate, and outgoing fellowship.*

CLINTON ELECTRIC SUPPLY COMPANY, INCORPORATED, AWARD *for outstanding electrical student.*

COMMONWEALTH BANK & TRUST COMPANY DATA PROCESSING DEPARTMENT AWARDS *to two outstanding students in the Computer Science Program, one for the two-year associate computer science degree and one for the one-year certificate computer operator course, based on the following criteria: scholastic attainment, leadership ability, and contribution to data processing education at The Williamsport Area Community College.*

THE COMPUTER SCIENCE FACULTY AWARDS *to two outstanding students in the Computer Science Program who have excelled in the program and who have exhibited those qualities of leadership, friendship, cooperation, and dedication that will make him/her a valuable addition to the profession. One award will be given to a two-year Computer Science Degree student and one to a one-year Computer Operator Certificate student.*

DEANS' AWARD *for scholastic achievement and service to the College.*

DENTAL HYGIENE FACULTY AWARD *to the student who demonstrates outstanding cooperation, dedication, and professionalism in Dental Hygiene.*

ELIZABETH R. DOWNS AWARD *for secretarial proficiency.*

FORKLIFTS, INCORPORATED, AWARD *given to a graduating cooperative education student in the Service and Operation of Heavy Construction Equipment Program who has demonstrated superior competencies in the service area.*

GAMMA EPSILON TAU FRATERNITY AWARD *to the student in the Graphic Arts Program who exhibits outstanding development in skill, capability and leadership, and a willingness to help others.*

HOFF SUPPLY COMPANY AWARD, *in memory of the late Samuel H. Hoff, for his understanding and appreciation of the need for plumbing and heating tradespeople to be able to use mathematics effectively and accurately in the application of their craft, to the graduating student in plumbing and heating who excelled in related mathematics and attended college under exceptional conditions.*

THE DR. CLARKE J. HOLLISTER MEMORIAL AWARD *to the graduating student of Dental Hygiene who has displayed outstanding interest and accomplishment in the area of patient education.*

HU-FRIEDY GOLDEN SCALER AWARD *for outstanding student achievement in the Dental Hygiene program.*

THE KOHLER COMPANY AWARD *to the graduating plumbing and heating student with academic excellence and exceptional ability to perform trade related skills.*

DAVID LETSCHER MEMORIAL SCHOLARSHIP AWARD *to a student in the Computer Science program at The Williamsport Area Community College based on the following criteria: scholastic achievement, leadership ability, and dedication as exhibited by David Letscher. The recipient is selected by the Computer Science faculty and the award is donated by the West Branch Data Processing Association.*

LYCOMING COUNTY DENTAL SOCIETY AWARD *to the student who has obtained the highest scholastic standing for the prescribed years of Dental Hygiene study.*

LYCOMING RADIOLOGY ASSOCIATES, LTD. AWARD *for the student who most nearly exemplifies the ideals of selflessness, unusual devotion to duty, sensitivity to the patient's comfort and needs, and service to colleagues, patients and the hospital beyond the ordinary.*

THE JACK MINNIER ACHIEVEMENT AWARD IN BUSINESS *to a graduate of the Business and Computer Science Division who earned at least a 3.00 cumulative grade point average and who exhibits personal achievement, personal perseverance, poise, personality, and leadership qualities.*

THE EWING W. MUESELER AWARD *for the student showing the highest degree of proficiency in the Diesel Program.*

THE NORTH CENTRAL DENTAL HYGIENISTS' ASSOCIATION AWARD *to the student who exhibits the greatest enthusiasm and commitment to the Dental Hygiene Program.*

THE NORTHERN CENTRAL BANK ANNUAL AWARD *to a graduating student in the two-year Computer Science Associate Degree curriculum based on the following criteria: the student (1) must plan to enter the data processing field, (2) must have demonstrated excellence in programming and other data processing curriculum, (3) must have maintained an above average total scholastic achievement, and (4) must have demonstrated a high degree of leadership ability.*

PENNSYLVANIA INSTITUTE OF CERTIFIED PUBLIC ACCOUNTANTS' AWARD *for excellence in accounting studies under criteria set forth by the Pennsylvania Institute of Certified Public Accountants in the Business and Computer Science Division.*

PENN-YORK LUMBERMEN'S AWARD *for outstanding citizenship and interest in management and wise use of forest resources.*

PHI BETA LAMBDA FRATERNITY AWARD *for performance and dedication to the fraternity.*

PRESIDENT'S AWARD *for leadership and service to the college community.*

PULLMAN POWER PRODUCTS AWARD *for scholastic achievement in an associate degree program in applied arts and sciences, High Technologies Division.*

THE SECRETARIAL SCIENCE FACULTY AWARD *presented to the secretarial student who has demonstrated outstanding proficiency in all secretarial skills as well as excellence in the areas of human relations, leadership, and cooperation.*

HELEN A. SMITH AWARD *presented to the nursing student who has shown extraordinary achievement in theory, practicum and personal growth.*

CHAPTER 49 OF THE SOCIETY OF MANUFACTURING ENGINEERS (SME) AWARD *a certificate of merit to the SME student-member who has contributed most to the advancement of manufacturing education.*

ROSE STAIMAN MEMORIAL AWARD *to the student who fulfills the following requirements of brotherhood, service to college and community, and scholastic achievement.*

WILLIAM J. STITZEL MEMORIAL AWARD *for the graduate from the heavy construction equipment department who best exemplifies William J. Stitzel's dedication and service to the College and the student body.*

ROBERT G. THOMAS AWARD *for the graduating student who has attained the highest cumulative average in welding.*

TRUSTEES' AWARD *for achievement under exceptional conditions (awarded to two students).*

U. A. LOCAL NO. 810 PLUMBERS AND STEAMFITTERS AWARD *to a graduating student in plumbing and heating, residing in the Local No. 810 membership area, who has shown a strong interest and desire to become a member of the Plumbers and Steamfitters Local No. 810.*

WALL STREET JOURNAL STUDENT ACHIEVEMENT AWARD *to that graduating student demonstrating superior achievement in business administration.*

THE WEST BRANCH DATA PROCESSING AWARD *to an outstanding student in the computer science field.*

THE WEST BRANCH RADIOLOGICAL ASSOCIATES AWARD *to an outstanding graduate student of the Radiologic Technology Associate Degree program who has demonstrated high scholastic achievement, competence in and dedication to the profession, and a caring attitude toward all people.*

# ADVISORY COMMITTEES

### GENERAL ADVISORY COUNCIL

GEORGE E. LOGUE (Chairman)/George E. Logue, Inc.
NED ATKINS/Vice President, Engineering, Glyco Inc.
MICHAEL R. J. FELIX/Williamsport City Councilman
WILLIAM H. FISH/Fish Real Estate
JOHN GARRISON/Lycoming County Commissioner
DAVID M. MIELE/Owner, Hillside Restaurant
PAULINE MONTGOMERY/Mayor, Borough of Hughesville
PHILLIP A. PETTER/Merchandising Manager, Reliable Furniture Galleries
FRED PLANKENHORN/Plankenhorn Stationery Company
JOHN SAVOY/John Savoy and Sons, Inc.
ROBERT TROISI/Troisi Men's Wear

### NORTH CAMPUS

JAMES DUNHAM (Chairman)
RALPH C. ANTRIM, JR./Administrator, Soldiers and Sailors Memorial Hospital
RICHARD W. FORD/Vice President, Commonwealth Bank and Trust Company
WILLIAM K. FRANCIS/President, Citizens and Northern Bank
ROBERT A. GILCHRIST/Plant Manager, GTE Sylvania
CRAIG HORTON/ABC Gaines
RICHARD HUMMEL/President, J.P. Ward Foundry
ALAN KECK/Acting Plant Manager, Dresser Industries, Inc.
JACK LEWIS/President, Wellsboro Chamber of Commerce
ROBERT McCONNELL, SR./Farming Business

### COOPERATIVE EDUCATION

AL CLAPPS/Manager, Burger King
RALPH EVANS/Owner, Ralph's Ford Service Center
JAMES FARFAGILIA/Director, West Branch School
ARTHUR L. FRY/Personnel Director, Pennsylvania Department of Transportation
JOSEPH GIUNTA/Manager, Industrial Relations, Stroehmann Brothers Company
RONALD HAMPTON/Supervisor of Computer Programming, Sprout-Waldron Division, Koppers Company, Inc.
SAMUEL HOFF, JR./Owner, Hoff Supply Company
CHRISTOPHER S. LUTZ/Service Technician, Fowler Motors
ELERY W. NAU/Hardware and Electrical Supplier
MARTIN PISH/Teacher, Woodward Township School
TERRY REYNOLDS/Postal Employee, Williamsport Post Office
LINDA WHALEY/Secretary, The Williamsport Area Community College
ALLEN WOLESLAGLE/Branch Manager, Forklifts, Inc.

### COPING (ACT 101)/DEVELOPMENTAL STUDIES

EDWARD CLAUDIUS/Guidence Counselor, Montoursville Area High School
JEFFREY CORRIGAN/Personnel Director, Divine Providence Hospital

LINDA HAAS/Personnel Director, Pennsylvania House Furniture
WANDA HOFF/Dietetic Technician*
PETER STOCKETT/Personnel Director, Williamsport National Bank
MICHAEL WILT/Manpower Administrator, Lycoming/Clinton County Consortium, CETA

## COUNSELING & CAREER DEVELOPMENT

MARILYN BEAR/Pennsylvania Power and Light Company
DONALD BENNETT/Local Office Manager, Bureau of Employment Security
HELEN BRINK/Retired Guidance Counselor
EDWARD W. CLAUDIUS/Guidance Counselor, Montoursville Area High School
MARY JANE EVENDEN
WAYNE FAUSNAUGHT/Supervisor of Guidance and Counseling, Williamsport Area School District
DAVID FRANKLIN/Executive Director, Lycoming Association for the Blind
COZY ROBINSON
RHONA WILK/Projects with Industry/Placement Counselor, Hope Enterprises Rehabilitation Workshop
MICHAEL J. WILT/Manpower Administrator, Lycoming/Clinton County Consortium, CETA

## BUSINESS AND COMPUTER SCIENCE

### Accounting

JEFF HOYT
DAVID STARK/Accounting Department, BroDart Industries
BARRY STIGER/Commercial Loan Officer, Commonwealth Bank and Trust Company
LEE A. VIARD/Tax Consultant

### Business Management

ROBERT S. HARDER/Vice President and Secretary, Northern Central Bank and Trust
DONALD G. HOLTZMAN/General Manager, Stone Corrugated Container Corporation
DON KARAFFA/Plant Manager, Philips ECG, Inc.
JACK MINNIER/Market Administrator, Bell of Pennsylvania

### Computer Science

RONALD BOYCE/Assistant Manager of Data Processing, Commonwealth Bank and Trust Company
HARRY CARLIP/Director - MIS, American Home Foods
PETER M. CODISPOTI/Senior Systems Analyst, C.A. Reed Division of Westvaco
RONALD FENTON/Systems Manager, Woolrich Woolen Mills
CHRIS GIRTON/Controller, Girton Manufacturing Company
JAMES J. GORE/Data Processing Manager, Avco Corporation, Lycoming Division
TIMOTHY GUYER/Divisional MIS Director, The West Company
RONALD HAMPTON/Data Processing Manager, Sprout-Waldron Division, Koppers Co. Inc.
FRITZ HOCKMAN/Controller/DP Manager, Chemcoat
HENRY KLEIN/Manager, Data Processing, Chemcut Corporation
RAY LYNCH/Manager, D.P., Pullman Power Products
BLAINE E. MOYER/Senior Vice President of Operations Division, Northern Central Bank and Trust
DONALD T. ROUSCHE/Data Processing Manager, Stroehmann Brothers Company
RICHARD WEIGEL/Supervisor of Management Information Services, GTE Sylvania, Photoflash Plant
GLEN WENTZEL/Vice President, Finance, Cenpro, Inc.

### Retail Management

JAMES COOLEY/Greystone Advertising
RON PEETE/The Smart Shop
DORIS STABINGAS/Sears, Roebuck and Company
JOHN TROISI/Troisi Men's Wear

*Graduate of The Williamsport Area Community College

### Secretarial Science

JUDY REITMEYER/Cultures Division, Bloomsburg State College
JOSEPH L. RIDER/Attorney at Law
DR. MARY SCHWEIKLE
LINDA WHALEY/Secretary, The Williamsport Area Community College

## CONSTRUCTION TECHNOLOGIES

### Air Conditioning and Refrigeration

ROBERT BAILEY/Herre Brothers, Inc.
CHARLES A. DINSMORE/Manager, Refrigeration and Store Service, Weis Markets, Inc.
MIKE EARNEST/Pickelner Heating Company
JOHN ENGEL/Plumbers and Steam Fitters Union
GLENN GOODFELLOW/Manager, Service Training Center, William Bynum Education Center
ROBERT F. GUNNS/Energy Management Consultant, Pennsylvania Power and Light Company
JOHN LEIPHART/Training Director of Electronics and Service Areas, York Division of Borg-Warner
JERRY MILLER/Dixon Air Conditioning and Refrigeration Corporation
LOUIS PATALITA/Service Training Manager, Carrier Corporation
THOMAS A. QUEITZSCH/York Division, Engineered Machinery, Borg-Warner Corporation
JAMES REED/H.B. Alexander and Son Inc.*
MARTIN SNYDER/Service Manager and Training Coordinator, Ide Air Equipment, Inc.
RICHARD SPEACHT
NORMAN F. THOMPSON/Superintendent of Maintenance, Sprout-Waldron Division, Koppers Company, Inc.
WILLIAM WOLFE/Clayton Smith Company, Inc.

### Architectural Technology

ARTHUR ANDERSON/Assistant Professor, The Pennsylvania State University
DR. JUNE BASKIN/Director of Art, Williamsport Area School District
THOMAS B. BROWN/Assistant Professor, Architectural Engineering, The Pennsylvania State University
SAM DORNSIFE/Interior Decorator
PAUL FRIES/Architect
JOHN E. HOFFMAN/Architect
DON LAIRD/Student
EARL MOWREY/Contractor*
JEFF SMITH
FRANK SULLIVAN/Director, Potter County Planning Commission
ROGER WILLIAMS/Student

### Building Construction Technology/Construction Carpentry

RONALD L. CARNS/Carns Brothers, Inc.
CHARLES D. FIANTACA/CDF Home Improvements
DAVID N. HINAMAN
ROBERT C. JESSELL/Vice President, Lundy-Jessell Homes; Director of National Home Builders Assoc.
FRANCIS B. LORSON/Partner, Lorson and Lorson Building Contractors
CHARLES A. SHIPTON/President, C.A. Shipton, Inc., Building Contractor
CARL E. SNYDER/Secretary, G.C. Corporation
MAX M. THOMAS/General Superintendent, Lundy Construction Company
ROBERT WOOLCOCK/Pennsylvania Power and Light Company

### Electricel Occupations

KENNETH BREON/Consulting Engineer, K. H. Breon
HARRY FISLER/Manager, Conservation Services, Pennsylvania Power and Light Company
GARY GABLE/Paul Gable and Sons Electric, Inc.
ALAN KAUFMAN/Plant Engineer, Shop-Vac Crafttool Company
GUY KOSER/President, Koser Electric Company, Inc.
DAVID KRANZ/Inspector, Middle Department Inspection Agency
MICHAEL LECCE/Owner, Lecce Electric Company

DARYL MARDEN/Jersey Shore Steel Company
ELERY NAU/Hardware and Electrical Supplier
QUENTIN NOVINGER/Pennsylvania Power and Light Company
CARL SMOLLINGER/Bethlehem Steel Corporation
ROBERT STAIB/Foreman, Sprout-Waldron Division, Koppers Company, Inc.
RANDALL WRIGHT/Wright Sign Company

**Electrical Technology**

VIRGIL COLAVITTI/Proctor and Gamble, Charmin Plant
CHERYL DESMOND/Honeywell, Inc.
CHRIS HALL/Alcan Cable
JOHN HOUGH/Retired Professor, The Williamsport Area Community College
KIM KONYAR/Bethlehem Steel Corporation
ANGELO MARTINOZZI/Avco Corporation, Lycoming Division
CARLTON POLK/GTE Sylvania, Inc.
JACK SHAFFER/Avco Corporation, Lycoming Division
NORMAN THOMPSON/Sprout-Waldron Division, Koppers Company, Inc.
JOHN TYLER/GTE Sylvania, Inc.

**Plumbing & Heating**

ROBERT L. BERKHEIMER/Executive Director, PAPHCC
HAROLD J. CARPENTER/Business Manager, Local 810, Plumbers and Steam Fitters Union
MICHAEL CELLINE/Montour Auto Service Company
PAUL DAMASCA/Plumbing Masters
JOHN F. ENGEL/Plumbers and Steam Fitters Union
SAMUEL R. HOFF/President and Treasurer, Hoff Supply Company
RON PAJOR/Manufacturing Representative, Mechanical Products
WADE PUGH/R.A. Munder Company, Inc.
JESS SCHMUCK/Vice President and General Manager, Williamsport Plumbing and Heating Company
WALTER SCHWARTZ/Zone Manager, Kohler Company
MICHAEL STEINBACHER/Service Manager, Montour Auto Service

## EARTH SCIENCE

**Agribusiness/Deiry Herd Menagement**

LARRY CORSON/District Conservationist, Soil Conservation District
TED DOEBLER/Co-Owner, Doeblers of Pennsylvania Hybrids, Inc.
SAMUEL R. FRY/Farm Operator
JAMES GOTTSCHALL/Manager, Agway
PATRICIA HALLOWELL/Farm Operator
GORDON HILLER/Field Representative, Department of Environmental Resources
DAVID JARRETT/Dairy Farmer
MARLIN H. McCLELLAN/Regional Director, Department of Agriculture
WILLIAM MESSERSMITH/Cooperative Extension Office
ROBERT REICH/General Manager, Farm Credit Service
GEORGE ROBINSON/Owner-Operator, Feed Store
DR. GLENN STEVENS/Retired Professor
DAVID THOMPSON/Manager, Agway
FRANK WHITE/Farm Operator
THELMA WHITE/Farm Operator
DAVID WILLIAMS/Farm Operator
WILLIAM WILLIAMS/Vice President, Jersey Shore State Bank

**Forest Technology**

RAY AZZATO/Regional Park Superintendent, Bureau of Parks
DONALD BENSON/Salesman, Cotton Hanlon Company
WILLIAM W. BROOKS III/Pulpwood Producer
ROY W. CUMMINGS, JR./Vice President, Cummings Lumber Company
ROBERT DAVEY/District Forester, Bureau of Forestry
JACK M. GILES/Division of Game Management, Pennsylvania Game Commission
ROBERT HERZ/Eastern Wood Products
KEITH HORN/Parent of Forest Technology student
DAVID HUNTER, JR./Salesman, Georgia Pacific
FRANCIS X. KENNEDY/District Forester, Bureau of Forestry
LEONARD KUHNS/Co-Owner, Kuhns Brothers Lumber Company
PAUL E. LANDON/Proctor and Gamble Paper Products Company
PATRICK M. LANTZ/Bureau of Forestry
DWIGHT LEWIS/Owner, Lewis Lumber Company, Inc.
MELVIN LEWIS/Owner, Lewis Lumber Company, Inc.
PHILLIP McCARTHY/Manager, Wood Procurement, Proctor and Gamble Paper Products
WILLIAM McFARLAND/Counselor, Lock Haven High School
FRANCIS MITSTIFER/Co-Owner, Mitstifer Brothers Sawmill
BROOKS REESE/Vice President, Reese Lumber Company
RICHARD RODENBACH/Proctor and Gamble Paper Products Company
CARL SCHLAPPI/Principal, Williamsport High School
GARY STACKHOUSE/Williamsport High School
A. E. STAMER/Wood Procurement, Masonite Corporation
PAUL SWARTZ/Bureau of Soil and Water Conservation, Department of Environmental Resources
EDWARD SWISHER/Wood Procurement Manager, Hammermill Paper Company
MICHAEL THOMPSON/Hughesville High School
R. R. THORPE/Director, Bureau of Forestry
MICHAEL YEAGLE/Buyer, Maple Grove Mills

**Horticulture**

MARLIN E. ARBEGAST/Sales Representative, Loft's Pedigreed Seed
SCOTT BAYLOR/Country Cupboard Inc.
DENNIS BURD/Owner, Country Market Landscape Garden Center
NEIL DUNKLE/Co-Owner, D.A.D.'s Lawn, Garden and Leisure Center
ROBERT ESHLEMAN, JR./Owner-Manager, Eshleman's Nursery
GARY FEEREE/White Deer Golf Course
CHRIS FINK/Donna's Flower Shop
HELEN FRENCH/Owner, Enchanted Florist
EDMUNDT GOLOMB/Owner-Manager, Andres Florist
ROSEMARY HOLMES/Co-Owner, Nevill's Flowers and Greenhouses
WILLIAM HOLMES/Co-Owner, Nevill's Flowers and Greenhouses
VINCENT KUHARIC/Owner, Kuharic's Florist
BRIAN KULUZNY/White Deer Golf Course
DANIEL LICHENWALNER
PAUL MIKKELSEN/Independent Sales Representative
DAN MITCHELL/General Manager, The Conard-Pyle Company
MARILYN MURPHY/Owner, House of Flowers
BARRY PLOWMAN/Garden Center Manager, Shiloh Nurseries, Inc.
JAMES K. RATHMELL, JR./Professor, Floriculture Extension, The Pennsylvania State University
KENNETH REESE/Educator
BILL SLATER/Binghamton Slater Company, Inc.
MIKE STEBBINS/Retail Manager, Shiloh Nurseries, Inc.
CATHY VOGEL
ARNOLD B. WAGNER/Executive Secretary, Pennsylvania Flower Growers
WALLY WENTZ/Wally Wentz Florist
DONALD WERT/Owner-Manager, Wert Landscape Design

**Service and Operation of Heavy Construction Equipment**

LEO ASHCRAFT/Personnel Training Manager, Highway Equipment Company
WILLIAM BASHISTA/President, Straight Line Construction Company, Inc.
JOHN BRAUN/Lycoming Silica Sand Company
ROBERT DIETZ/Personnel Director, L. B. Smith Inc.
RUSSELL FAIRCHILD/President, Fairchild Brothers
WILLIAM FAYLOR/Faylor-Middlecreek Construction
DAN KERRIS/Glen Burn Colliery, Inc.
GEORGE LOGUE/Owner, George E. Logue, Inc.
RAY P. LOTT/Technical Analyst, Cleveland Brothers, Inc.
J. MICHAEL MURPHY/Service Manager, Cleveland Brothers, Inc.
ERIC PARKER
JAMES ROCKEY/Retired, Bureau of Forestry
SHANNON K. ROSSER
EVAN ROSSER III
JURGEN RYMER/Sales Representative, L.B. Smith Inc.
MARK SMITH/Cleveland Brothers, Inc.
GARY L. SNYDER/Service Manager, Cleveland Brothers, Inc.
WILLIAM E. WAGNER/Construction Service Engineer, P.E., Pennsylvania Department of Transportation

*Graduate of The Williamsport Area Community College

ALDEN WALSH/G. H. and F. C. Wagaman
ROBERT WEBB/Sales Representative, Highway Equipment Supply Company
A. ALLEN WOLESLAGLE/Manager, Forklifts, Inc.
FRANK WOLYNIEC, JR./Manager, Allenwood Equipment Company
JAMES WOLYNIEC/Vice President, Frank Wolyniec and Sons Construction Co.

### Wood Products Technology

DONALD BENSON/Cotton Hanlon
MAX BINGAMAN/President, Bingaman and Sons Lumber Company
HARRY BRESSLER/Division Manager, Burke-Parson-Bowlby Corporation
ROBERT BUSHMAN/President and Owner, Mann and Parker Lumber Company
JACK CRATON/Lumber Purchaser, Pennsylvania House, Division of General Mills
ROY W. CUMMINGS, JR./Vice President, Cummings Lumber Company
WILLIAM DEAN/Vice President, Donald Dean and Sons
JOHN R. DREVCO/Owner, Drevco Products, Inc.
RONALD GALE/Wood Utilization Advisor, Department of Environmental Resources, Bureau of Forestry
ROBERT HERZ/Eastern Wood Products
DAVID HUNTER, JR./Salesman, Georgia Pacific
FRANCIS X. KENNEDY/District Forester, Bureau of Forestry
DALE KEPNER/Plant Manager, Rishel Furniture Company
LEONARD KUHNS/Co-Owner, Kuhns Brothers Lumber Company
DWIGHT LEWIS/Co-Owner, Lewis Lumber Company
MELVIN LEWIS/Co-Owner, Lewis Lumber Company
JOHN MALLERY/Mallery Lumber Company
JAMES R. MATSON/Owner, Matson Lumber Company
JAY McCALL/Plant Manager, McCallco
EUGENE M. MERLOE/Manager, American Lumber Company
BROOKS REESE/President, Reese Lumber Company
RICHARD C. RODENBACH/Proctor and Gamble Paper Products Company
GERALD SCHANBACHER/Owner, Mansfield Novelty Company
A. E. STAMER/Wood Procurement, Masonite Corporation

## HIGH TECHNOLOGIES

### Civil Technology

ERVIN DUKATZ/Bucknell University
ROBERT W. FERRELL, JR./Civil Engineer
CLIFTON A. FRY, JR./U.S. Geological Survey
ROGER HEPNER/Mid-Penn Engineering Corporation
WILLIAM HOLMES/Former student
RICHARD SLATTERY/Student
ROBERT H. SMITH/Retired instructor
PAUL SOLOMAN/Soils Engineer, Pennsylvania Department of Transportation
DONALD WILBUR/Chief Photogrammetry & Surveys, Pennsylvania Department of Transportation
E. CHARLES WUNZ/Buchart-Horn

### Drafting Technologies

MICHAEL BECKMAN/Student
RAYMOND BOWER/Young Industries
JAY DAWES/Chief Draftsman, Anchor Darling Valve Company
LARRY GUISEWITE/Alcan Cable Company
CLINTON HALL/Sprout-Waldron Division, Koppers Company, Inc.
STEVE JONES/Supervisor of Drafting, Cable Services
GARY McQUAY/The West Company
ELWOOD MOON/Avco Corporation, Lycoming Division
RANDY ROOK/Structures Department, Conrail

### Electronics Technology

CARL CRAGER/Litton Industries, Inc.
JAMES HAMILTON/IBM
DONALD HILL/Divine Providence Hospital
KURT HUNTER/GTE Sylvania, Inc.
FREDRICK R. KENDIG/P.E., Consumer Products Division, GTE Products Corporation
WILLIAM MATTOX/Bailey Meter Company
JACK MROCK/GTE Sylvania, Inc.
RICHARD PASCO/Litton Industries
EDWARD VIBERT/GTE Sylvania, Inc.
KATHY WEHR/Circuit Products Division, GTE Products Corporation

### Machine Shop

HOWARD DATRES/American Home Foods
ALBERT ESCHENBAUGH/Sprout-Waldron Division, Koppers Company, Inc.
JOSEPH GEHRET/Norcen Industries, Inc.
RAYMOND MARSHALEK/Fairfield Manufacturing
CHARLES STORRS/Lemco Tool Corporation
DONALD STOUT/Keystone Friction Hinge

### Welding

FRANK BARTOLOMEO/Superintendent, E. Keeler Company
CHARLES BIRD/Avco Corporation, Lycoming Division
MERRILL BLOOM
JAMES CARPENTER/Local 810, Plumbers and Steam Fitters Union
LYNN CRIST/Young Industries
LIONEL FORTIER/Welding Engineer, Anchor Darling Valve
GEORGE GEISE/Kennedy Van Saun
JACK LESSIG/Williamsport Fabricators
WILLIAM McCLEAN/Grumman Allied, Inc.
ROBERT SHANDRY/Williamsport Fabricators
EMERSON SWINEHART/Piper Aircraft
WILLIAM YOST/A. C. & F. Industries

## HUMANITIES AND COMMUNICATION ARTS

### Advertising Art/Technical Illustration

MAX AMEIGH/Educator, Craftsman, Artist
DAVID BOWEN/Photographic Illustrator, Becker and Bowen Associates
ROBERT CRAIN/Art Director, C.A. Reed Division of Westvaco
CLAY McAFOOSE/Student
VIRGINIA ULMER/Commercial Artist, BroDart, Inc.*

### Broadcasting

IRVING BERNDT/Retired Broadcasting Instructor, The Williamsport Area Community College
GALEN CASTLEBURY/Manager, WMPT, South Williamsport
GEORGE GILBERT/General Manager, WRAK-WKSB, Williamsport
LONNIE HILL/Announcer, WJSA, Jersey Shore
VANESSA HUNTER/News Director, WLYC-WILQ, Williamsport
HARRIS LIPEZ/Manager, WBPZ, Lock Haven
W. WILLIAM OTT/Manager, WWPA, Williamsport
PAUL ROTHFUSS/Owner, Broadcast Group, Williamsport
CAREY SIMPSON/Manager, WTRN, Tyrone
RICK SMITH/Announcer, WKSB, Williamsport
LARRY SOUDER/Manager, WPGM, Danville
GARY STRAUSSER/Salesman, WMPT, Williamsport

### Graphic Arts/Printing

MICHAEL COLLEDGE*
NICHOLAS DEMKO/Prep Department, Reed Hann Litho
DICKSON DYER/Salesman, Penn Graphics Supply Company, Inc.
ANTHONY GOBRECHT/Student
JAMES MILLER/Manager, Printing Department, Piper Aircraft
JAMES MUCHLER/Bucknell University
JANET ROBINSON/Sun Area Vocational-Technical School
MICHAEL THALER/Foreman, Data Papers, Inc.
JAMES WITHER/Department Chairman, Williamsport Area School District

### Journalism

JOHN BROCKWAY/Production Superintendent, *The Milton Standard* Milton
MAX L. COLEGROVE/Owner and Publisher, *Penny Saver,* Wellsboro and *Advertiser,* Mansfield

ALVIN N. ELMER/National News Editor, *Grit,* Williamsport
REBECCA F. GROSS/Editor Emeritus, *The Express,* Lock Haven
LINDA L. SPRINGMAN/Public Information Specialist, The Williamsport Hospital
CLIFFORD A. THOMAS/Editor, *Sun-Gazette,* Williamsport

## MATHEMATICS, SCIENCE, ALLIED HEALTH

### Dental Hygiene

DR. ROBERT FREDRICKSON/Private Practice
DR. MORRIS JACOBSON/Private Practice
MARGUERITE KRISHER*
SANDRA NOLAN/District Dental Hygienist, Pennsylvania Department of Health
PAMELA PARKS, R.D.H./Office of A. David Parks
DR. JEFFERSON PORTER/Private Practice
DR. DANIEL WURSTER/Private Practice
DR. MENDAL VANVALIN/Private Practice

### Food & Hospitality Management/Dietetic Technician

JOAN R. ALKIRE/Registered Dietitian, The Williamsport Hospital
HARVEY BOATMAN/Owner-Manager, Rinella Produce Company
RICHARD BURICK/Manager, Michael's Restaurant*
AL CLAPPS/Owner-Manager, Burger King
MICHAEL GOODERAU/Manager, Penn-Wells Hotel
LEE HARRISON/Registered Dietitian, Assistant Professor, Marywood College
SISTER VINCENT HUBER/Registered Dietitian, Divine Providence Hospital
CECILIA McLAUGHLIN, R.D./Food Service Director, Williamsport Area School District
LORRAINE MANLEY/Food Service Supervisor, Leader Nursing Home
DAVID MIELE/Owner, Hillside Restaurant
WILLIAM O'BRIEN/Owner-Manager, Haven Bake Shop
VIOLA PFLEEGOR/Food Service Director, Methodist Home*
DAVE SMITH/Kitchen Manager, Country Cupboard*
PEGGY STOUFFER/Home Economics Instructor, Williamsport High School
LINDA SWEELY/Proprietor, Sip and Dip Bakery
RICHARD WAPINSKI/Manager, Ponderosa Steak House*
TRUDY WELSHANS/Owner-Manager, Hotel Mohawk

### Surgical Technician

NANCY BERGESEN, R.N./Director, Nursing Service, Divine Providence Hospital
DR. MICHAEL BUMAGIN
SUSANNE CRESS/Patient Care Coordinator, Operating Room, Divine Providence Hospital
DR. WILLIAM H. GEHRON, JR.
BARBARA HYRINA, R.N./Operating Room, The Williamsport Hospital
CHARLOTTE RATKE, CORT
PATRICIA SOLLEY, R.N./Assistant Director of Nursing, Critical Care Unit, Divine Providence Hospital
DR. WILLIAM D. TODHUNTER
SISTER M. EMILENE WEHNER, R.N./Administrator, Divine Providence Hospital
MARY LOUISE WOLFE/Director of the Operating Room, The Williamsport Hospital

### Practical Nursing

NANCY BERGESEN, R.N./Director of Nursing Service, Divine Providence Hospital
DORIS FAIRCHILDS, R.N./Director of Nursing Service, Muncy Valley Hospital
MARY FENTON, R.N./Administrator, Leader Nursing Home
BETTYANN HAZELL, R.N./Director of Nursing, The Williamsport Hospital
DORIS HEIM, R.N./Director of Nursing Service, Lysock View Home and Hospital
JANICE HOFER, L.P.N.
JOANNE KREZMER, R.N./Administrator, Lysock View Home and Hospital
AL SPETH/Administrator, Lock Haven Hospital
MICHALINE SWANKOSKI, R.N./Director of Nursing Service, Lock Haven Hospital
SISTER M. EMILENE WEHNER, R.N./Administrator, Divine Providence Hospital

### Radiologic Technology

ROBERT ALBAN/Technologist, Divine Providence Hospital
SISTER AUGUSTA/Technologist, Divine Providence Hospital
FRANK ELLIS/Technologist, The Williamsport Hospital
DR. DAVID HEINEY/Director of Education, The Williamsport Hospital
DR. HARMON MACHANIC/Radiologist, Divine Providence Hospital
CRAIG PURSEL/Student
THOMAS SCHNARS/Technologist, The Williamsport Hospital
DR. GORDON SHAW/Radiologist, The Williamsport Hospital
KAREN SNYDER/Technologist, Divine Providence Hospital
CATHY SWISHER/Technologist, The Williamsport Hospital

## TRANSPORTATION TECHNOLOGIES

### Auto Body

RON BUDMAN/Owner, Budman's
DARYL FISHER/Claims Adjustor, Prudential Property and Casualty Insurance Company
RALPH HEATER/Owner-Operator, Ralph Heater Auto Body
ANTHONY MIGNOT/Service Manager, Bill Marks Ford
DANIEL PLANKENHORN/Owner-Operator, Allied Auto
EDWON STROBLE, JR./Owner-Operator, Stroble's Garage
RICK THURSBY/Bill Fry Ford
STEVEN WHIPPLE/Owner-Operator, Whipple's Auto Body

### Auto Mechanics

ARTHUR BARR/Owner, Barr Motors, Inc.
CECIL CALVERT/Shop Foreman, Bill Fry Ford
VIRGIL FOWLER/Owner, Fowler Motors
THOMAS KOONTZ/Mechanic, Van Campen Dodge-Chrysler-Plymouth
MARVIN MILLER/Service Manager, Liberty Chevrolet
DAVID SHIRN/Owner, Shirns-Pontiac GMC
GENE YORKS/Service Manager, Van Campen Dodge-Chrysler-Plymouth

### Automotive Technology

CHARLES CODER/Department of Mechanical Engineering, Bucknell University
GERALD ESHBACH/Service Manager, Larry Herron, Inc.
GARRY L. FOLTZ/Service Manager, Carnes Ford
DONALD KING/Owner-Operator, K and W Transmissions
LARRY STROUSE/Zone Representative, Sun Electronics

### Aviation

ROBERT BARRETT/Foreman, Avco Service Center, Lycoming Division
KARL CRIST/Mechanic, Avco Service Center, Lycoming Division
RICHARD FREEBURN/Chief Maintenance Inspector, Federal Aviation Administration
ROBERT GIFT/Co-Owner, Lock Haven Airmotive Company
WILLIAM LEUTHOLD/Technical Writer, Piper Aircraft
CLYDE SMITH, JR./Service Inspector, Piper Aircraft
WILLIAM YAGGI/Service Technician, Cessna Aircraft

### Diesel Mechanics

MICHAEL DECKMAN/Susquehanna Nuclear Training Group
GEORGE FREDRICKS/Vice President, General Manager, Diesel Service, Inc.
JOHN GINGRICH/Branch Manager, Penske Detroit Diesel Allison
STANLEY KABATA/Shop Foreman, Pennsylvania Power and Light Company
C. D. KELLER/Co-Owner, Operator, Keller and Schell
JOHN KELLY/Owner-Operator, Hunter and Lomison, Inc.
ROBERT RUSSELL/Owner, Russell's Road Service
WILLIAM THOMKE/General Manager, Nau and Thompson

*Graduate of The Williamsport Area Community College

# STAFF

### OFFICE OF THE PRESIDENT

ROBERT L. BREUDER/President; B.A., M.S., State University of New York at Albany; Ph.D., The Florida State University

ROBERT G. BOWERS/Executive Assistant for Internal Affairs (Professor); B.S., Juniata College; M.S., University of Delaware; Ph.D., The Pennsylvania State University

FREDERICK T. GILMOUR/Executive Director, The Williamsport Area Community College Foundation; A.A., The Williamsport Area Community College

RODNEY G. HURLEY/Dean, Educational Research, Planning and Evaluation; B.A., M.S., The Florida State University

### INTERNATIONAL FACULTY

DR. PAUL CHAO/Professor of International Relations (Orient)

DR. WERNER KUBSCH/Professor of International Relations (Europe)

### ACADEMIC AFFAIRS

RUSSELL C. MAUCH/Dean of Academic Affairs; B.A., Muhlenberg College; M.A., Ph.D., University of Massachusetts, Amherst

Associate Dean of Career Programming...Vacant

JOHN THOMPSON/Associate Dean of Technology Programming; B.S., Delaware Valley College; M.S., University of Scranton

#### Academic Divisions and Programs

BRENDA ABPLANALP/Assistant Coordinator, Practical Nursing Program; B.S.N., University of Rochester

CATHRYN L. ADDY/Director of North Campus; B.A., Kansas State University; M.A., State University of New York at Oswego; Ph.D., University of Texas

DONALD B. BERGERSTOCK/Director of Business and Computer Science Division (Professor); B.S., Bloomsburg State College; M.S., Bucknell University; D.Ed., The Pennsylvania State University

WILLIAM C. BRADSHAW/Director of Experiential Learning (Assistant Professor); B.S., M.S., Mansfield State College

JAMES A. BRYAN/Counselor, Developmental Studies and Act 101 (Associate Professor); B.S., Lycoming College; M.S., Bucknell University

BARBARA A. DANKO/Director of Lifelong Education; B.S., Mansfield State College; M.A., Indiana University of Pennsylvania

WILLIAM H. DEBOLT/Director of Transportation Technologies Division; B.S., California State College; M.Ed., Shippensburg State College

FRED W. DOCHTER/Construction Coordinator, Professional Development Center; Assistant Professor, Carpentry; A.A., The Williamsport Area Community College

LINDA M. FALCHEK/Coordinator of Practical Nursing; B.S., Neumann College (formerly Our Lady of Angels College)

JAMIE FLICK/Coordinator, Computer Science Laboratory; A.A.S., The Williamsport Area Community College

R. DEAN FOSTER/Director of Developmental Studies and Act 101; B.A., M.Ed., Lehigh University

VALERIE HAYDOCK/Coordinator, Individualized Learning Center; B.S., Bloomsburg State College

RALPH A. HORNE/Director of Construction Technologies Division; B.S., M.S., University of Tennessee; Ed.D., Virginia Polytechnic Institute and State University

CAROL F. KAUFMAN/Coordinator of On-Campus Non-Credit Programs; B.A., The Pennsylvania State University

DIANA L. KUHNS/Coordinator of Tutoring (Assistant Professor); B.A., The Pennsylvania State University

THOMAS LEITZEL/Assistant Director of Business and Computer Science Division; A.A., The Williamsport Area Community College; B.A., Lycoming College; M.S., Temple University

WILLIAM J. MARTIN/Director, Secondary Vocational Programs; B.A., Lycoming College; M.S., Ph.D., The Pennsylvania State University

CYNTHIA MENGEL/Act 101 Instructional Specialist/Assistant Director; B.S., Clarion State College; M.Ed., The Pennsylvania State University

JAMES MIDDLETON/Director of Humanities and Communication Arts Division; B.A., M.A., Ed.S., University of Iowa; M.A., University of Leeds, England; D.A., University of Michigan

ANN MIGLIO/Coordinator of Food and Hospitality Laboratories; B.S., University of Wisconsin, Stout Campus

MICHAEL P. NESTARICK/Director of Mathematics, Science and Allied Health Division (Associate Professor); B.S., Bloomsburg State College; M.S., Bucknell University

ELAINE PARKER/Coordinator of Computer Science Laboratory; A.A.S., The Williamsport Area Community College

MICHAEL A. SEDLAK/Coordinator of Specialized Business and Industrial Programs; A.A.S., B.S., M.S., The Pennsylvania State University

ROBERT J. SLOTHUS, RT(R)/Coordinator of Radiologic Technology Program; B.S., Thomas Jafferson University

GLENN R. SPOERKE/Acting Director of Earth Science Division (Associate Professor, Forestry); B.S., M.S., The Pennsylvania State University

MICHAEL STANZIONE/Secondary Vocational Programs Coordinator; B.A., Lock Haven State College

CHALMER VAN HORN/Coordinator of Drafting; Associate Professor, Drafting; C.F.M.E.; B.S., The Pennsylvania State University

ROBERT VAUGHN/Coordinator of Machining/Welding; Instructor, Welding; Certificate, A.A.S., The Williamsport Area Community College

PATRICIA L. WATSON/Coordinator of Radiologic Technology Clinic Lab; B.S., Salem College

Director of High Technologies Division...Appointment pending

### ADMINISTRATION

WILLIAM C. ALLEN/Dean of Administration; B.S., The Pennsylvania State University

#### Business Operations

G. THOMAS WILEY/Director of Business Operations; B.S., Bryant College; M. Ed., Temple University

PATRICIA M. BALDWIN/Manager, Word Processing Center

ELEONORE R. HOLCOMB/Supervisor of Bookstore

MICHAEL L. McCARTY, CPA/Fixed Asset Accountant; B.S., Indiana University of Pennsylvania

JANICE W. ODELL/Supervisor of Purchasing

HARRY TUPPER/Manager of Warehouse

#### Computer Center

CARL L. CHRISTIANSEN/Director of Computer Services

MICHAEL M. CUNNINGHAM/Programmer Analyst; A.A.S., The Williamsport Area Community College

ALAN TYSON/Data File Programmer; A.A.S., The Williamsport Area Community College

WILLIAM T. WARD/Systems Analyst (Assistant Professor); B.S., Wisconsin State University; M.S.A., The George Washington University

ANNE E. WEILMINSTER/Operations Manager; A.A.S. (2), The Williamsport Area Community College

CHARLES H. WHITFORD/Programmer Analyst; Certificate, Williamsport Technical Institute

#### Financial Operations

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# COLLEGE CALENDAR . . . . . 1983-1984

## FALL SEMESTER 1983

### August

| | | |
|---|---|---|
| Fri. | 19 | Convocation/Advanced Placement Testing |
| Mon. | 22 | Late Registration |
| Tue. | 23 | Orientation |
| Fri. | 26 | Classes Begin |

### September

| | | |
|---|---|---|
| Fri. | 2 | Last Day to Request Advanced Placement<br>Last Day to Add Classes<br>Last Day to Drop Classes with 80% Refund |
| Mon. | 5 | Labor Day Vacation |
| Tue. | 6 | Classes Resume |
| Fri. | 9 | Last Day to Drop Classes with 70% Refund |
| Fri. | 16 | Last Day to Drop Classes without a Grade<br>Last Day to Drop Classes with 60% Refund |

### October

| | | |
|---|---|---|
| Fri. | 14 | Last Day to File "Petition to Graduate" For December Graduates |
| Fri. | 28 | Staff Development Day — No Classes |
| Mon. | 31 | Classes Resume |

### November

| | | |
|---|---|---|
| Fri. | 4 | Last Day to Drop Classes with a "W" Grade |
| Thu. | 24 | Thanksgiving Day Vacation |
| Fri. | 25 | Thanksgiving Vacation |
| Mon. | 28 | Thanksgiving Vacation |
| Tue. | 29 | Classes Resume |

### December

| | | |
|---|---|---|
| Mon. | 19 | Last Day of Classes<br>Last Day to Drop Classes |

## SPRING SEMESTER 1984

### January

| | | |
|---|---|---|
| Tue. | 3 | Orientation/Advanced Placement Testing |
| Wed. | 4 | Late Registration |
| Mon. | 9 | Classes Begin |
| Fri. | 13 | Last Day to Request Advanced Placement<br>Last Day to Add Classes<br>Last Day to Drop Classes with 80% Refund |
| Fri. | 20 | Last Day to Drop Classes with 70% Refund |
| Fri. | 27 | Last Day to Drop Classes without a Grade<br>Last Day to Drop Classes with 60% Refund |

### February

| | | |
|---|---|---|
| Fri. | 17 | Last Day to File "Petition to Graduate" For May Graduates |
| Mon. | 20 | Winter Vacation or Snow Make-Up |
| Tue. | 21 | Classes Resume |

### March

| | | |
|---|---|---|
| Fri. | 16 | Last Day to Drop Classes with a "W" Grade |
| Mon. | 19 | Staff Development Day — No Classes or Snow Make-Up |
| Tue. | 20 | Classes Resume |

### April

| | | |
|---|---|---|
| Thur. | 19 | Spring Vacation or Snow Make-Up |
| Fri. | 20 | Spring Vacation or Snow Make-Up |
| Mon. | 23 | Classes Resume |
| Mon. | 30 | Last Day of Classes<br>Last Day to Drop Classes |

### May

| | | |
|---|---|---|
| Sat. | 12 | Commencement |

For Information On Administrative Deadlines, Check The Appropriate Policy In This Catalog.

# ABOUT THE COLLEGE

## Philosophical Platform

We believe in people – in their dignity, in their worth as individuals, and in their capacity to develop their abilities to the fullest potential. We believe that people who perform competently and who find meaning in their work will be healthier and happier people, and the organizations in which they work and the communities in which they live will benefit. We believe in an integrated approach to learning where education and the world of work function in a cooperative atmosphere. We believe that by assisting the individual in discovering, preparing for, developing and maintaining a career, we are also developing the community.

## Mission

It is the mission of The Williamsport Area Community College to provide performance-oriented educational services responsive to the current and future needs and interests of individuals and organizations in our service area. We are dedicated to working with other agencies in developing the full potential of individuals and communities in our area. We are deeply committed to providing quality and accessible career education on both the high school and college level, as well as lifelong learning opportunities. Within the resources available to us, we will attempt to carry out our mission as efficiently as possible. Above all, we care about people and will attempt to fulfill our mission within the context of a humanistic educational environment.

## Institutional Goals

### Primary Goals

(1) Provide equal educational opportunities for all citizens of the service area within the context of a humanistic educational environment.
(2) Prepare or retrain individuals for employment and advancement.
(3) Provide services which assist secondary and postsecondary students to explore their career interests, to recognize their aptitudes, develop an educational program which best suits their needs, interests, and potential for personal growth, and to obtain employment in their chosen fields.
(4) Contribute to the life-long learning opportunities of our service area through on and off-campus educational programs in cooperation with other organizations.

### Support Goals (Internal)

(1) Strive for effectiveness and efficiency in all aspects of institutional operation.
(2) Provide appropriate facilities, attractive grounds, and a physical environment which stimulate and enhance learning.
(3) Offer programs of staff development for all personnel which foster an institutional climate favorable to individual growth and encourage participation in decision-making by all constituents.
(4) Provide an opportunity for communication between the College and all those affected by its operation.

### Support Goals (External)

(1) Provide for adequate financial resources to support the institution's programs and services.
(2) Cooperate with other institutions, organizations, and agencies in formulating and implementing viable programs and services.
(3) Communicate the College's mission, goals, objectives, and programs to the public.
(4) Maintain accountability to the public, to students, to sponsor school districts, and to the state with regard to the educational, fiscal, legal and contractual aspects of the operation of the College.

College Offices are open throughout the fall, winter and spring, except on official College holidays, from 8:00 A.M. to 4:30 P.M. Monday through Friday. During the summer, College Offices are open 7:30 A.M. until 4 P.M., Monday through Thursday and until 1 P.M. on Fridays.

Please send me an Application for Admission form to
THE WILLIAMSPORT AREA COMMUNITY COLLEGE

Name_____

Address _____ Tel. No. _____

City _____ State _____ Zip Code_____

High School _____ Year of Graduation_____

College(s) _____

I am interested in the _____ Curriculum

I would like further information about_____

Please send me an Application for Admission form to
THE WILLIAMSPORT AREA COMMUNITY COLLEGE

Name_____

Address _____ Tel. No. _____

City _____ State _____ Zip Code_____

High School _____ Year of Graduation_____

College(s) _____

I am interested in the _____ Curriculum

I would like further information about_____

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The Williamsport Area Community College
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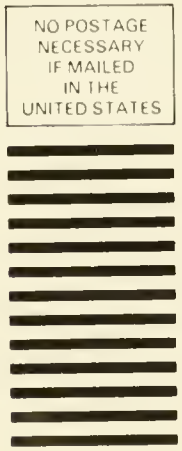
Williamsport, Pennsylvania 17701-9981



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# CAMPUS MAP

**ATC — Automotive Trades Center**
- Auto Body Repair
- Automotive Mechanics
- Automotive Technology
- Transportation Technology Office

**DC — Diesel Center**
- Diesel Mechanics

**TTC — Technical Trades Center**
- TT1
- Secondary Automotive
- TT2 & TT3
- Electrical Occupations
- Electrical Technology
- TT4
- Machine Tool Technology
- Machinist General

**MTC — Metal Trades Center**
- Welding
- High Technology Office

**GYM — Gymnasium**
- Physical Education & Health

**LRC — Learning Resources Center***
- Architectural Technology
- Associate Dean, Educational Services
- Bookstore
- Cooperative Education
- Counseling, Career Development and Placement
- Dean, Educational Research, Planning & Evaluation
- Developmental Studies & Act 101
- Library
- Mathematics/English Laboratory
- Media Center
- Reading Laboratory

**BTC — Building Trades Center**
- Air Conditioning/Refrigeration
- Carpentry & Building Construction Technology
- Construction Technology
- Plumbing and Heating
- Construction Technology Office

**ACC — Academic Center***
- Accounting
- Advertising Art
- Business Management
- Clerical Studies
- Computer Science
- Dental Hygiene
- Dietetic Technician
- English
- Food & Hospitality Management
- Journalism
- Practical Nursing
- Radiologic Technology
- Retail Management
- Secretarial Science
- Surgical Technology
- Technical Illustration
- Word Processing
- Admissions
- Associate Academic Dean
- Bursar
- Business & Computer Science Office
- Cafeteria
- Center for Lifelong Education
- College Information
- Computer Center
- Dispensary
- Financial Aid
- Humanities & Communication Arts Office
- Math, Science, Allied Health Office
- SPOTLIGHT
- Student Association Office
- Student Records
- Tot Watch
- Veterans' Information
- YETP

**ADM — Administration**
- Broadcasting
- Electronics Technology
- Engineering Drafting Technology
- Graphic Arts
- Industrial Drafting
- Printing
- Science Laboratories
- WWAS - Radio Station
- President's Office
- Business & Financial Operations
- Dean, Academic Affairs
- Dean, Administration
- Dean, Development
- Dean, Employee & Public Relations
- Duplicating & Mail Services
- Executive Assistant for Internal Affairs
- Personnel
- Secondary Vocational Programs Office

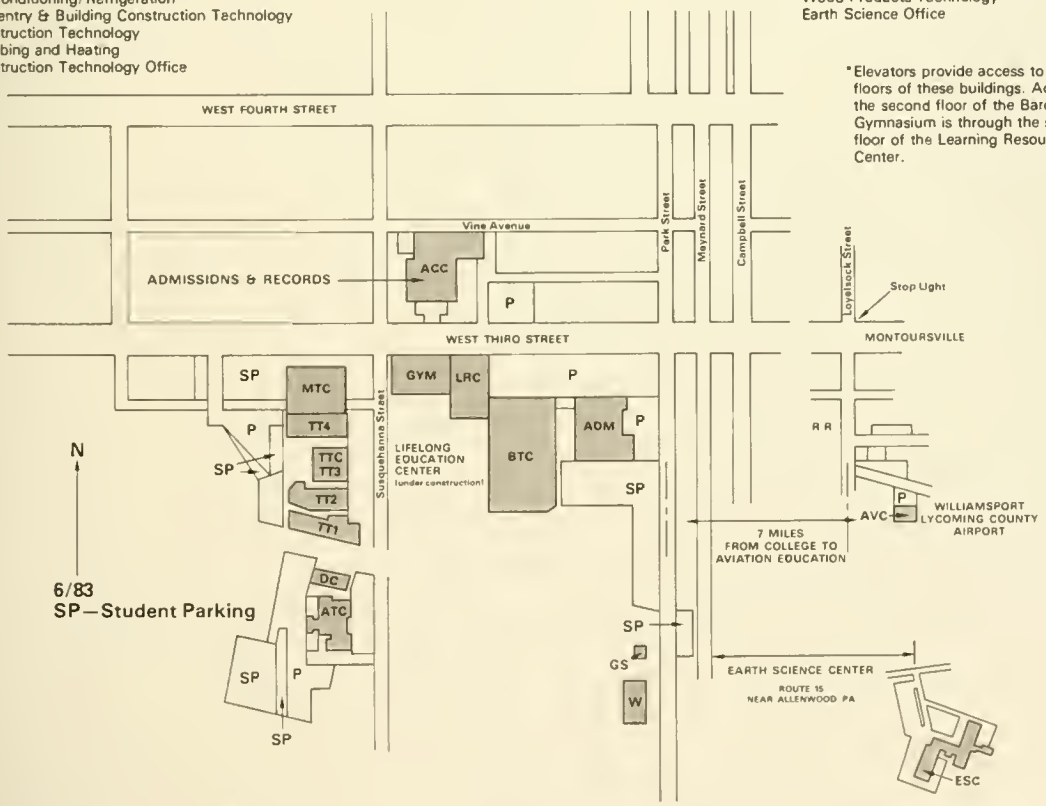
**GS — General Services**
- Dean, General Services
- Security

**W — Warehouse**

**AVC — Aviation Center**
- Aviation Maintenance Technology
- Aviation Technology

**ESC — Earth Science Center**
- Agribusiness
- Floriculture
- Forest Technology
- Nursery Management
- Service & Operation of Heavy Construction Equipment
- Wood Products Technology
- Earth Science Office

*Elevators provide access to the upper floors of these buildings. Access to the second floor of the Bardo Gymnasium is through the second floor of the Learning Resources Center.



# THE WILLIAMSPORT AREA COMMUNITY COLLEGE

1005 West Third Street • Williamsport, Pennsylvania 17701-5799 • (717) 326-3761